

FCC 47 CFR PART 15 SUBPART C AND ANSI C63.10:2013 TEST REPORT

For

7-inch WiFi Multimedia Navi 2DIN

Model: PTA-100

Trade Name: ASUKA

Issued for

Asuka Autotronics Inc.

2F, No.12, Prosperity Rd. II, SBIP, Hsinchu, Taiwan, R.O.C. 300

Issued by

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	12/19/2017	Initial Issue	All Page 93	Gloria Chang
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1. TEST REPORT CERTIFICATION

Applicant : Asuka Autotronics Inc.
Address : 2F, No.12, Prosperity Rd. II, SBIP, Hsinchu, Taiwan, R.O.C.
 300
Equipment Under Test : 7-inch WiFi Multimedia Navi 2DIN
Model : PTA-100
Trade Name : ASUKA
Tested Date : June 19 ~ November 29, 2017

APPLICABLE STANDARD	
Standard	Test Result
FCC Part 15 Subpart C AND ANSI C63.10:2013	PASS

WE HEREBY CERTIFY THAT: The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Reviewed by:

Rueyyan Lin

Rueyyan Lin
Sr. Engineer

Gundam Lin

Gundam Lin
Sr. Engineer

2. EUT DESCRIPTION

Product Name	7-inch WiFi Multimedia Navi 2DIN
Model Number	PTA-100
Identify Number	T171120D03
Received Date	June 19, 2017
Frequency Range	IEEE 802.11b/g, 802.11gn HT20 Mode: 2412MHz ~ 2462MHz IEEE 802.11gn HT40 Mode: 2422MHz ~ 2452MHz
Transmit Power	IEEE 802.11b Mode: 12.03 dBm (0.0160 W) IEEE 802.11g Mode: 19.09 dBm (0.0811 W) IEEE 802.11gn HT20 MCS0 Mode: 18.94 dBm (0.0783 W) IEEE 802.11gn HT40 MCS0 Mode: 16.74 dBm (0.0472 W)
Channel Spacing	5MHz
Channel Number	IEEE 802.11b/g, 802.11gn HT20 Mode: 11 Channels IEEE 802.11gn HT40 Mode: 7 Channels
Transmit Data Rate	IEEE 802.11b Mode: up to 11 Mbps IEEE 802.11g Mode: up to 54 Mbps IEEE 802.11gn HT20 Mode (800ns GI): up to 65.00 Mbps IEEE 802.11gn HT20 Mode (400ns GI): up to 72.20 Mbps IEEE 802.11gn HT40 Mode (800ns GI): up to 135.0 Mbps IEEE 802.11gn HT40 Mode (400ns GI): up to 150.00 Mbps
Type of Modulation	IEEE 802.11b Mode: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g Mode: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11gn HT20/40 Mode: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type	Dipole Antenna × 1 (External), Antenna Gain: 2 dBi
Power Rating	12Vdc
Test Voltage	12Vdc
I/O Port	Multi-Function (TV/USB/DVR/AVin/AVout) Port × 1, HDMI In Port × 1, Power/Audio/Ctrl Port × 1

Signal Cable	Shielded USB cable, 1m × 2/one set (Detachable) Non-shielded power & data cable, 0.2m × 1 (Detachable) Non-shielded microphone cable, 0.17m × 1 (Detachable) Shielded audio cable, 0.2m × 4/one set (Detachable) Shielded YPbPr cable, 0.2m × 6/one set (Detachable) Shielded AM/FM cable, 0.55m × 1 (Detachable)
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Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. For more details, please refer to the User's manual of the EUT.
3. This submittal(s) (test report) is intended for FCC ID: 2AOG5-PTA filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

3. DESCRIPTION OF TEST MODES

The EUT (7-inch WiFi Multimedia Navi 2DIN) had been tested under operating condition.
IEEE 802.11b/g, 802.11gn HT20/HT40 Mode: 1TX / 1RX

Conducted Emission / Radiated Emission Test (Below 1 GHz)

1. The following test modes were scanned during the preliminary test:

No.	Pre-Test mode
1	TX mode

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test mode		
Emission	Radiated Emission	Mode 1
	Conducted Emission	Mode 1

Remark: Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

Conducted / Radiated Emission Test (Above 1 GHz)

Following channel(s) was (were) selected for the final test as listed below.

Mode	Channel	Frequency (MHz)
IEEE 802.11b	Low	2412
IEEE 802.11g	Middle	2437
IEEE 802.11gn HT20	High	2462
IEEE 802.11gn HT40	Low	2422
	Middle	2437
	High	2452

IEEE 802.11b Mode: 1Mbps data rate (worst case) was chosen for full testing.

IEEE 802.11g Mode: 6Mbps data rate (worst case) was chosen for full testing.

IEEE 802.11gn HT20 MCS0 Mode: 6.5Mbps data rate (worst case) was chosen for full testing.

IEEE 802.11gn HT40 MCS0 Mode: 13.5Mbps data rate (worst case) was chosen for full testing.

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10:2013 and FCC CFR 47, 15.207, 15.209, 15.247 and KDB 558074 D01 (DTS Measurement Guidance) v04.

5. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247(a)(2)	6dB Bandwidth	Compliant
§15.247(b)(3)(4)	Maximum Peak Output Power	Compliant
---	Average Power	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.247(d)	Conducted Spurious Emission	Compliant
§15.247(d)	Radiated Emission	Compliant
§15.207(a)	Conducted Emission	Compliant

6. FACILITIES AND ACCREDITATION

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

No.989-1, Wenshan Rd., Shangshan Village,
Qionglin Township, Hsinchu County 30741, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.10:2013 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4 and CISPR 16-1-5.

6.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Taiwan	TAF
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The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	INDUSTRY CANADA
Japan	VCCI
Taiwan	BSMI
USA	FCC MRA

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>

Remark: FCC Designation Number TW0240.

6.3 MEASUREMENT UNCERTAINTY

The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2.

PARAMETER	UNCERTAINTY
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 30 to 1000 MHz	+/- 3.97
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 1 to 18GHz	+/- 3.58
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 26 to 40 GHz	+/- 3.81
Conducted Emission (Mains Terminals), 9kHz to 30MHz	+/- 2.48

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard (e.g. CISPR 22, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.

7. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	Notebook PC	TOSHIBA	PORTEGE R30-A	7F097009H	PD97260H
2	Battery (12Vdc)	YUASA	55D23L-CMFII	---	DoC

No.	Signal Cable Description
1	Non-shielded DC cable, 1.5m × 1
2	Shielded USB cable, 1.5m × 1

SETUP DIAGRAM FOR TESTS

EUT & peripherals setup diagram is shown in appendix setup photos.

EUT OPERATING CONDITION

1. EUT & peripherals setup diagram is shown in appendix setup photos.

2. TX mode:

⇒ **Data Rate:** 1Mbps Bandwidth 20 (IEEE 802.11b Mode)

6Mbps Bandwidth 20 (IEEE 802.11g Mode)

6.5Mbps Bandwidth 20 (IEEE 802.11gn HT20 MCS0 Mode)

13.5Mbps Bandwidth 40 (IEEE 802.11gn HT40 MCS0 Mode)

⇒ **Power control**

Mode	Channel	Frequency (MHz)	Power Set
IEEE 802.11b	Low	2412	14
	Middle	2437	11
	High	2462	11
IEEE 802.11g	Low	2412	19
	Middle	2437	19
	High	2462	14
IEEE 802.11gn HT20 MCS0	Low	2412	19
	Middle	2437	19
	High	2462	14
IEEE 802.11gn HT40 MCS0	Low	2422	19
	Middle	2437	14
	High	2452	12

3. All of the functions are under run.

4. Start test.

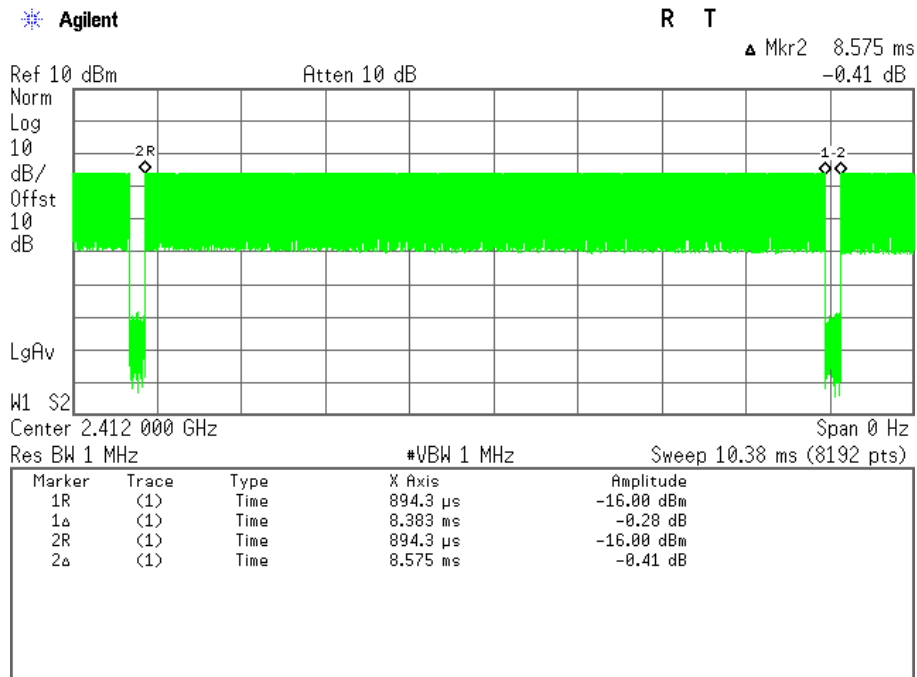
8. FCC PART 15.247 REQUIREMENTS

8.1 DUTY CYCLE CORRECTION FACTOR

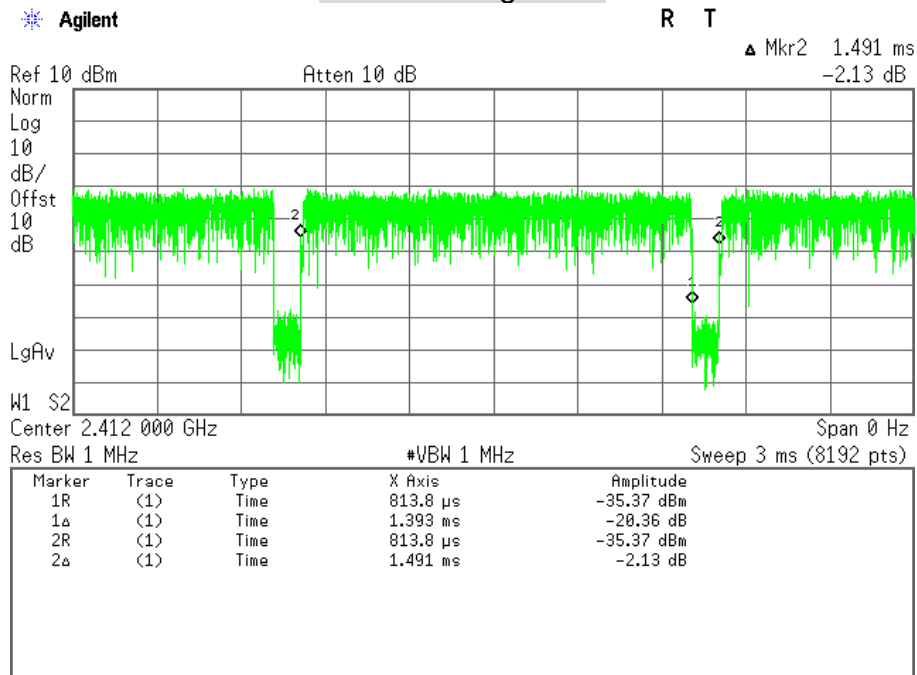
Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/09/08
Test Mode	TX Mode	Temp. & Humidity	20°C, 63%

Mode	TX on (ms)	TX on + off (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
IEEE 802.11b	8.383	8.575	97.76%	0.10	0.119
IEEE 802.11g	1.393	1.491	93.43%	0.30	0.718
IEEE 802.11gn HT20	1.301	1.398	93.06%	0.31	0.769
IEEE 802.11gn HT40	0.640	0.746	85.74%	0.67	1.563

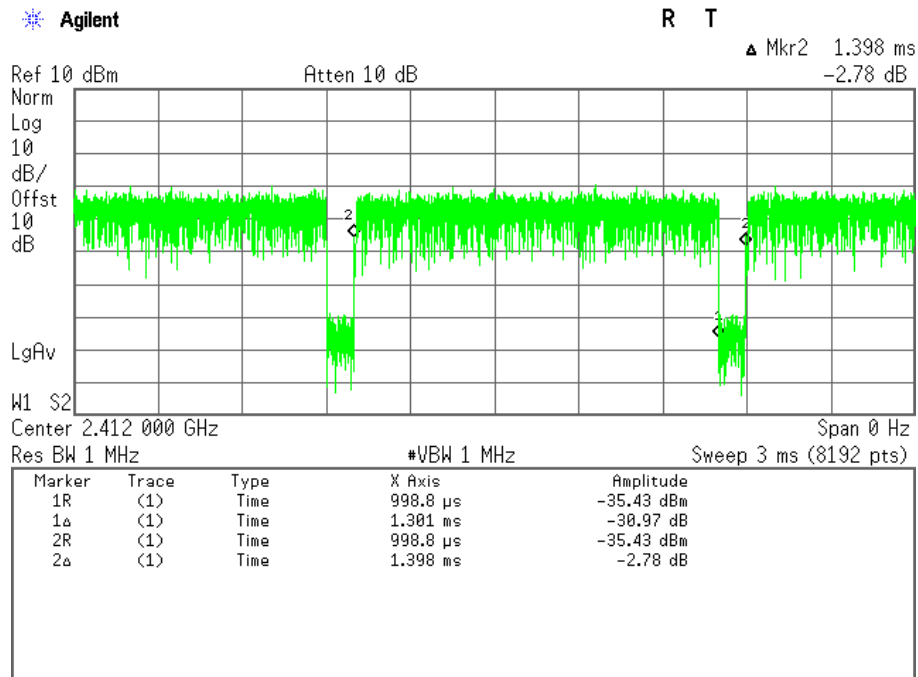
IEEE 802.11b Mode



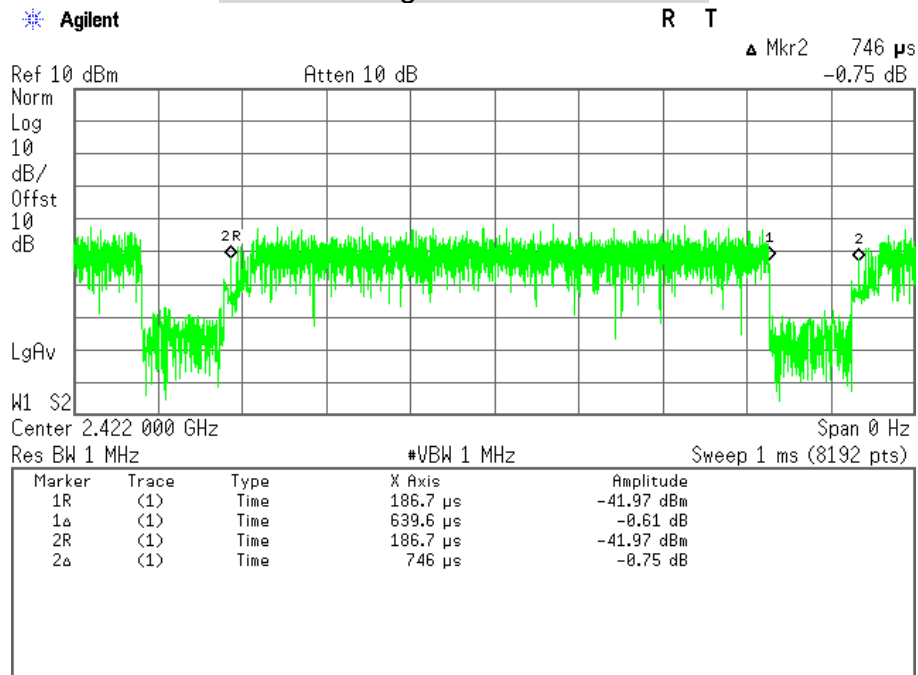
IEEE 802.11g Mode



IEEE 802.11gn HT20 MCS0 Mode



IEEE 802.11gn HT40 MCS0 Mode



8.2 6dB BANDWIDTH

LIMITS

§ 15.247(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EXA Signal Analyzer	Agilent	N9010A	MY52220817	03/07/2018
Attenuator	INMET	18B-10dB	647671	11/10/2017
Cable	Woken	WC02	13051820	11/10/2017
Test S/W	N/A			

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

1. The transmitter output was connected to a spectrum analyzer.
2. Set RBW = 100 kHz.
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST RESULTS

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/29
Test Mode	TX Mode	Temp. & Humidity	24°C, 58%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Result
Low	2412	8.562	500	PASS
Middle	2437	8.582	500	PASS
High	2462	8.565	500	PASS

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Result
Low	2412	15.680	500	PASS
Middle	2437	15.690	500	PASS
High	2462	15.660	500	PASS

IEEE 802.11gn HT20 MCS0 Mode

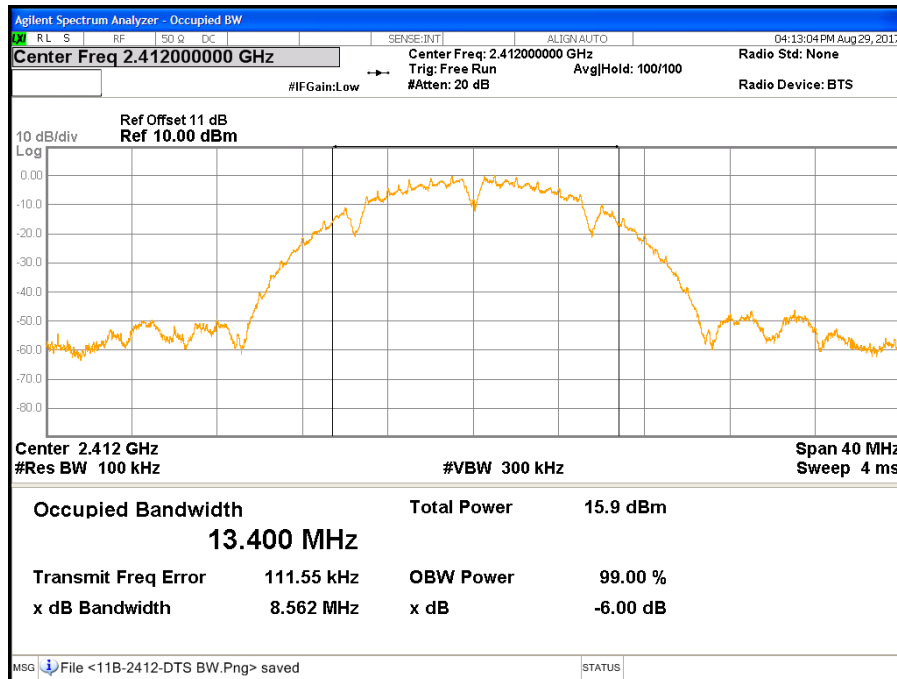
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Result
Low	2412	15.850	500	PASS
Middle	2437	17.120	500	PASS
High	2462	16.770	500	PASS

IEEE 802.11gn HT40 MCS0 Mode

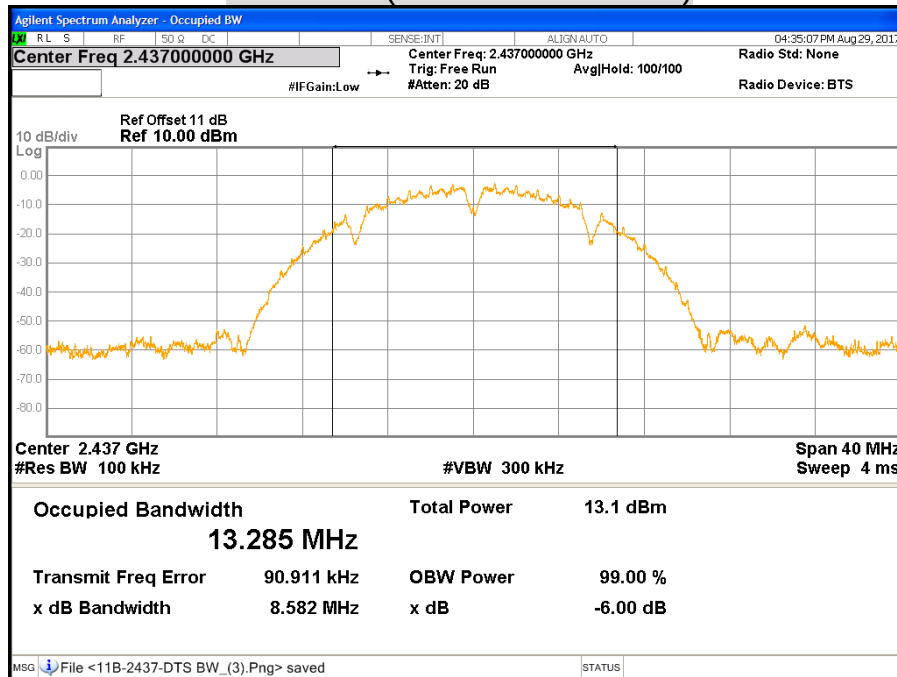
Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (kHz)	Result
Low	2422	32.650	500	PASS
Middle	2437	35.080	500	PASS
High	2452	35.090	500	PASS

6dB BANDWIDTH

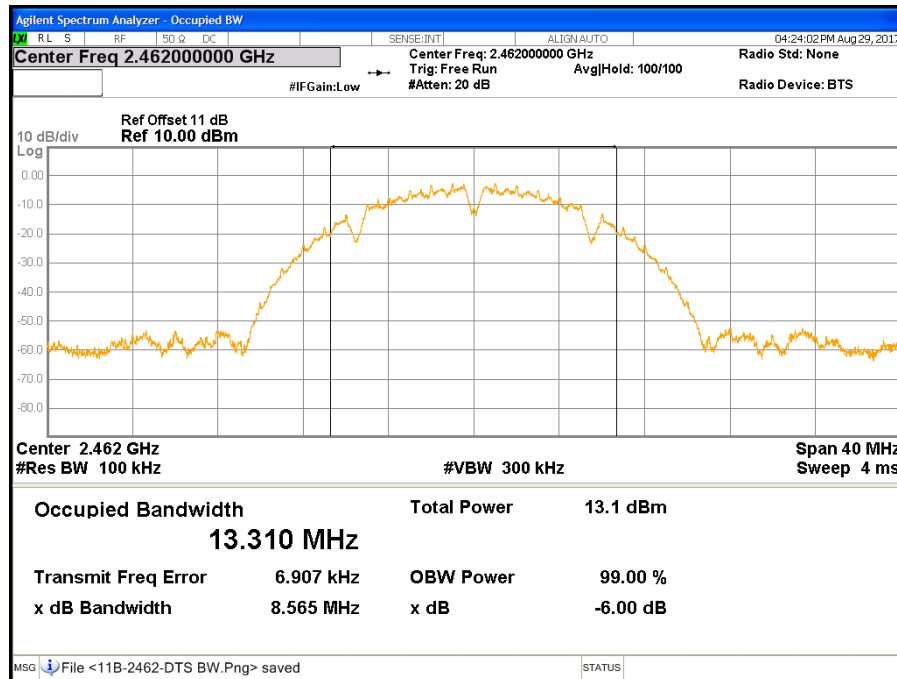
CH Low (IEEE 802.11b Mode)



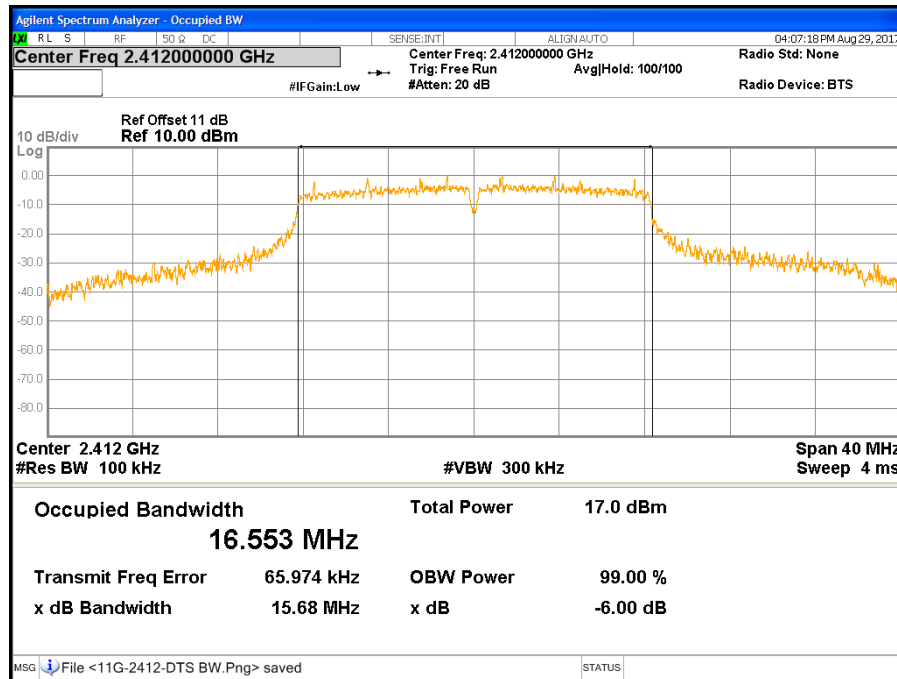
CH Middle (IEEE 802.11b Mode)



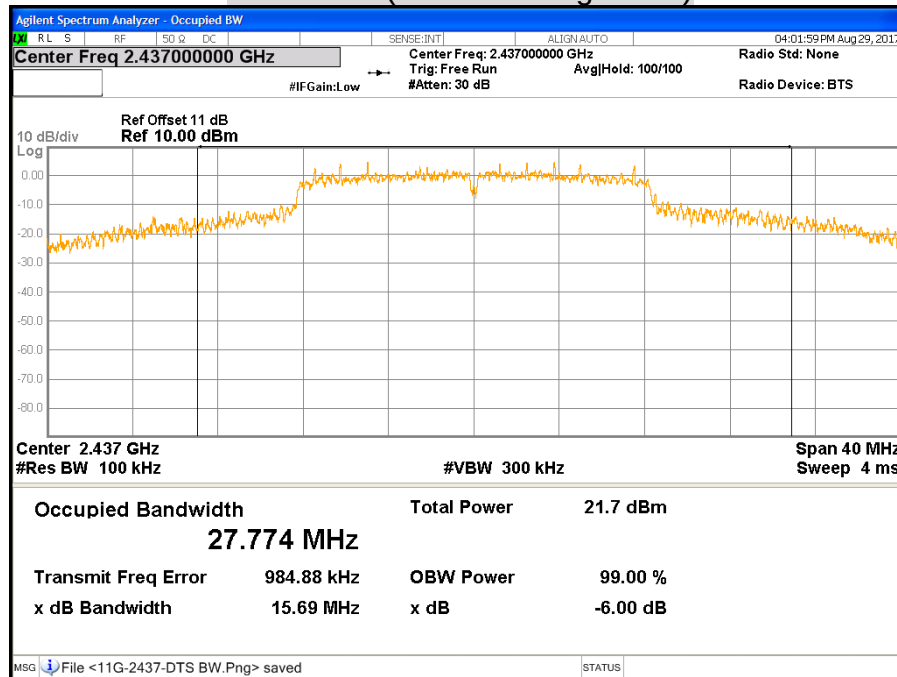
CH High (IEEE 802.11b Mode)



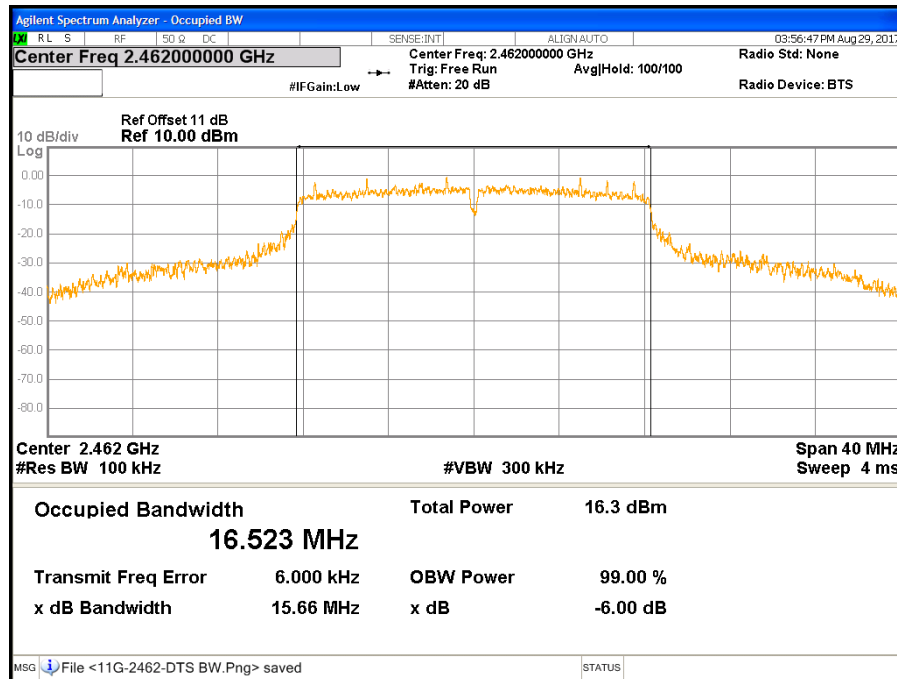
CH Low (IEEE 802.11g Mode)



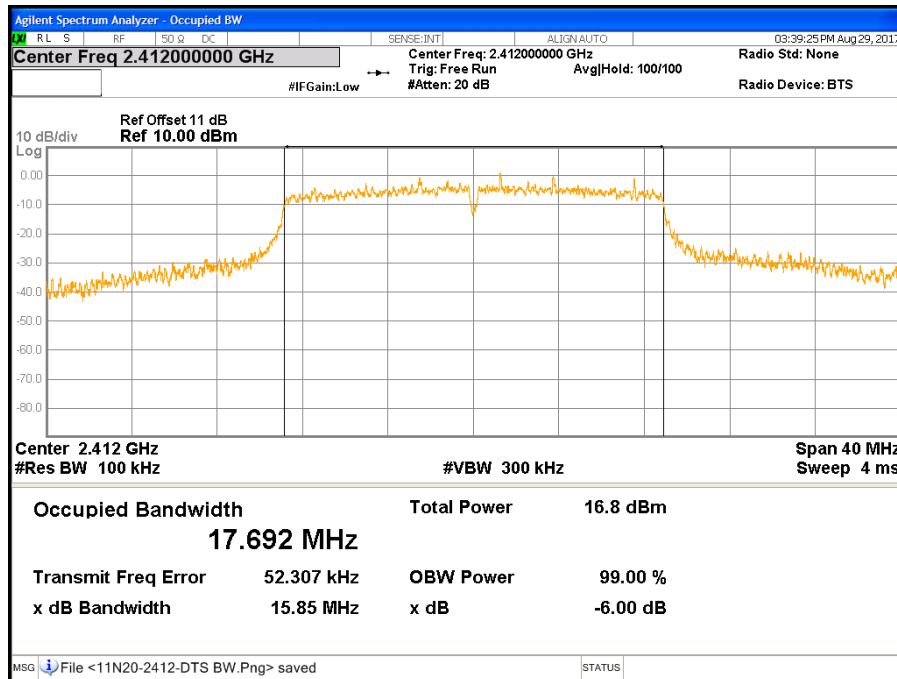
CH Middle (IEEE 802.11g Mode)



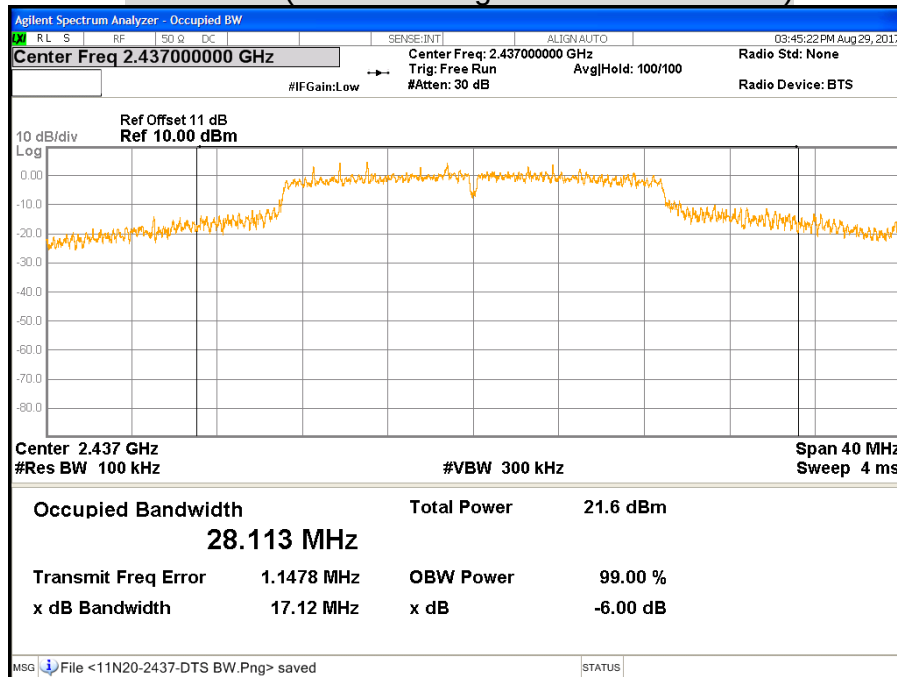
CH High (IEEE 802.11g Mode)



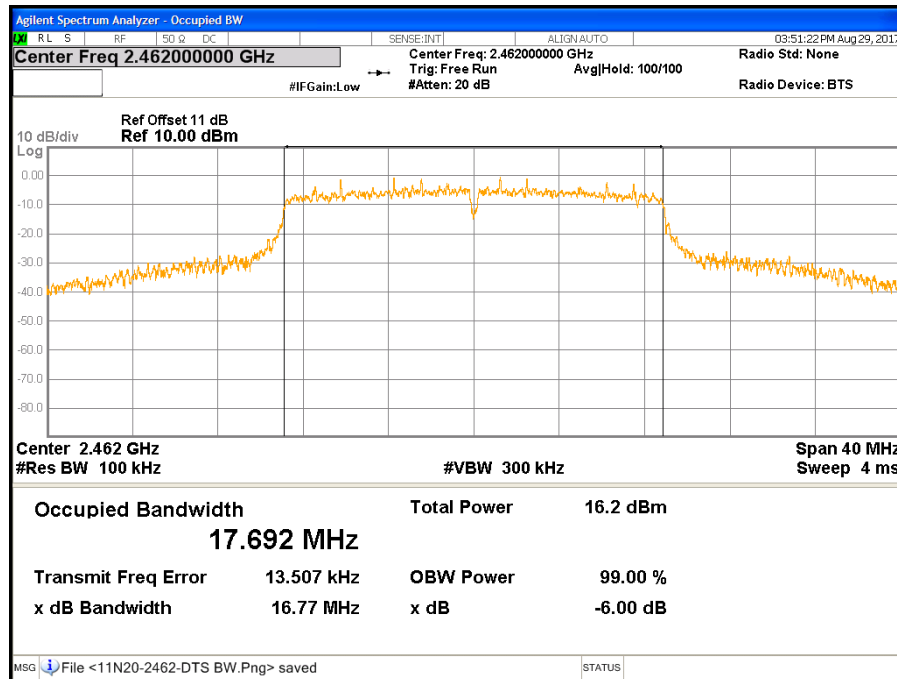
CH Low (IEEE 802.11gn HT20 MCS0 Mode)



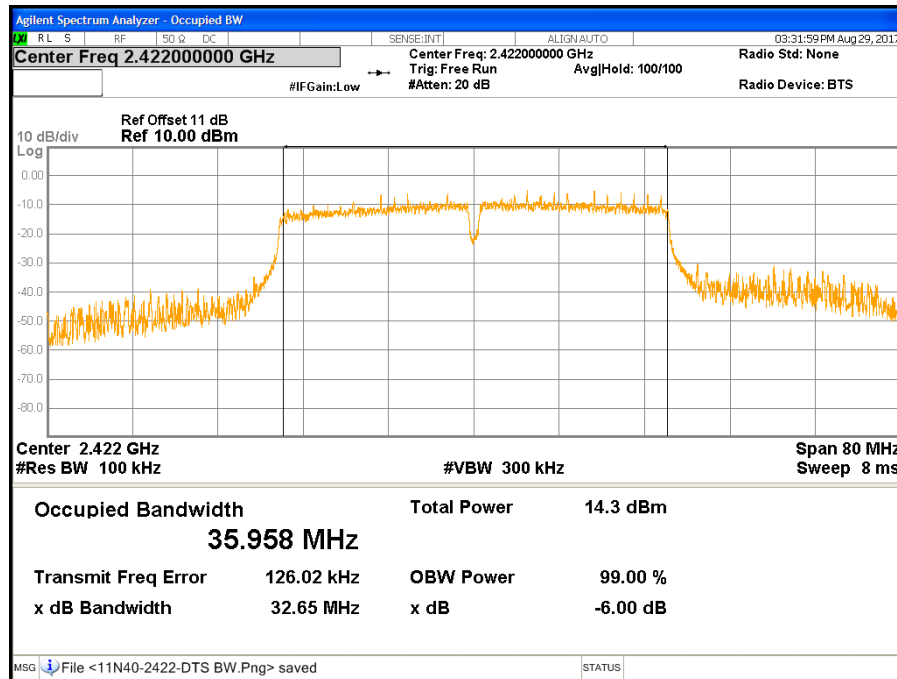
CH Middle (IEEE 802.11gn HT20 MCS0 Mode)



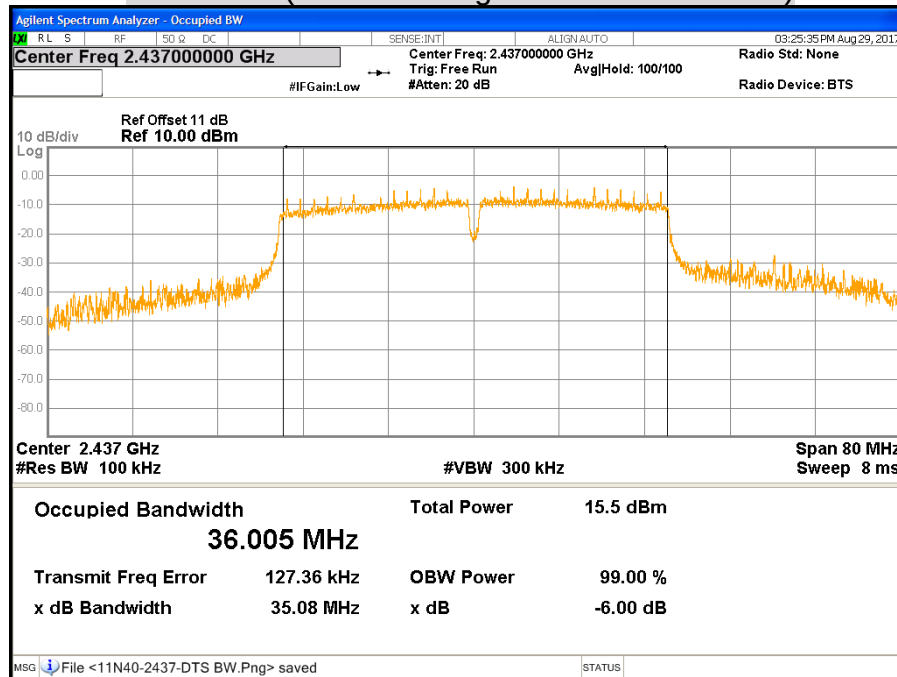
CH High (IEEE 802.11gn HT20 MCS0 Mode)



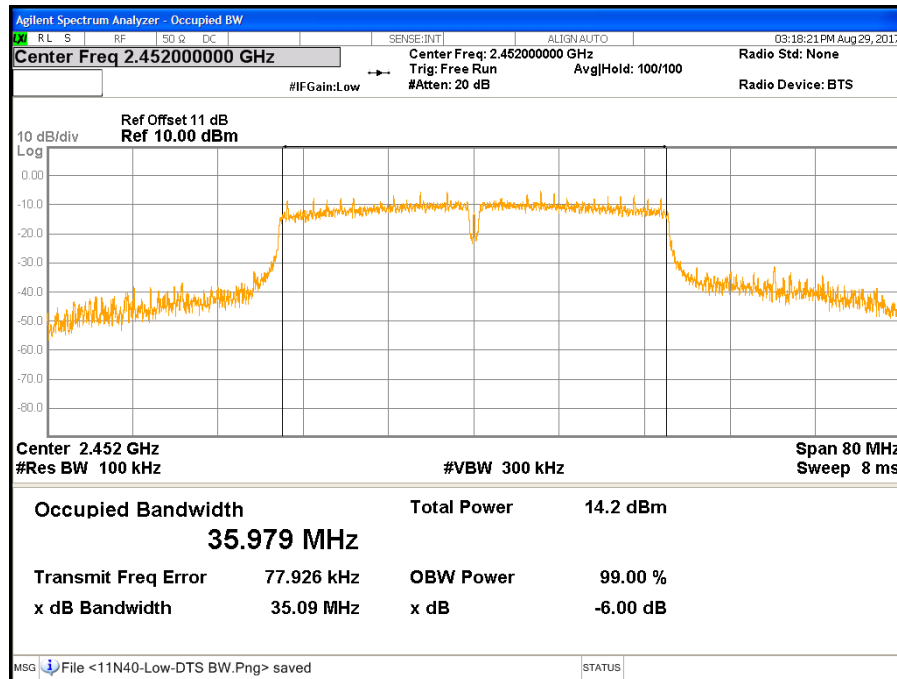
CH Low (IEEE 802.11gn HT40 MCS0 Mode)



CH Middle (IEEE 802.11gn HT40 MCS0 Mode)



CH High (IEEE 802.11gn HT40 MCS0 Mode)



8.3 MAXIMUM PEAK OUTPUT POWER

LIMITS

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following:

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

§ KDB 662911:

If all antennas have the same gain, G_{ANT} , Directional gain = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows.

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream:

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain; or,

$$\text{Directional Gain} = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2495A	1149001	12/04/2018
Power Sensor	Anritsu	MA2411B	1126148	12/04/2018
Attenuator	INMET	18B-10dB	647671	11/10/2017
Cable	Woken	WC02	13051820	11/10/2017
Test S/W	N/A			

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to the peak power detection.

TEST RESULTS

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/29
Test Mode	TX Mode	Temp. & Humidity	24°C, 58%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Maximum Peak Output Power		Limit		Result
		(dBm)	(W)	(dBm)	(W)	
Low	2412	12.03	0.0160	30	1.000	PASS
Middle	2437	9.14	0.0082	30	1.000	PASS
High	2462	9.16	0.0082	30	1.000	PASS

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain is 2 dBi which is less than 6dBi, the limit should be 30 dBm.

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Maximum Peak Output Power		Limit		Result
		(dBm)	(W)	(dBm)	(W)	
Low	2412	18.82	0.0762	30	1.000	PASS
Middle	2437	19.09	0.0811	30	1.000	PASS
High	2462	17.06	0.0508	30	1.000	PASS

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain is 2 dBi which is less than 6dBi, the limit should be 30 dBm.

IEEE 802.11gn HT20 MCS0 Mode

Channel	Channel Frequency (MHz)	Maximum Peak Output Power		Limit		Result
		(dBm)	(W)	(dBm)	(W)	
Low	2412	18.71	0.0743	30	1.000	PASS
Middle	2437	18.94	0.0783	30	1.000	PASS
High	2462	16.90	0.0490	30	1.000	PASS

Remark:

1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain is 2 dBi which is less than 6dBi, the limit should be 30 dBm.

IEEE 802.11gn HT40 MCS0 Mode

Channel	Channel Frequency (MHz)	Maximum Peak Output Power		Limit		Result
		(dBm)	(W)	(dBm)	(W)	
Low	2422	16.52	0.0449	30	1.000	PASS
Middle	2437	16.74	0.0472	30	1.000	PASS
High	2452	15.81	0.0381	30	1.000	PASS

Remark:

1. At final test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.
3. The maximum antenna gain is 2 dBi which is less than 6dBi, the limit should be 30 dBm.

8.4 AVERAGE POWER

LIMITS

None: For reporting purposes only.

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Power Meter	Anritsu	ML2495A	1149001	12/04/2018
Power Sensor	Anritsu	MA2411B	1126148	12/04/2018
Attenuator	INMET	18B-10dB	647671	11/10/2017
Cable	Woken	WC02	13051820	11/10/2017
Test S/W	N/A			

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to the power meter. The power meter is set to the average power detection.

TEST RESULTS

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/29
Test Mode	TX Mode	Temp. & Humidity	24°C, 58%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	9.67
Middle	2437	6.86
High	2462	6.85

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	10.99
Middle	2437	15.45
High	2462	10.40

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

IEEE 802.11gn HT20 MCS0 Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2412	10.88
Middle	2437	15.31
High	2462	10.16

Remark:

1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

IEEE 802.11gn HT40 MCS0 Mode

Channel	Channel Frequency (MHz)	Average Power (dBm)
Low	2422	8.20
Middle	2437	9.35
High	2452	8.24

Remark:

1. At final test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

8.5 POWER SPECTRAL DENSITY

LIMITS

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

§ KDB 662911:

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream:

Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain; or,

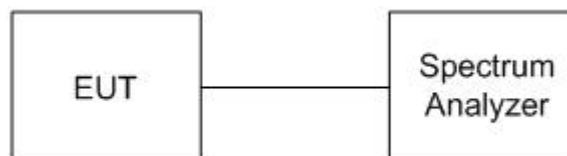
$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EXA Signal Analyzer	Agilent	N9010A	MY52220817	03/07/2018
Attenuator	INMET	18B-10dB	647671	11/10/2017
Cable	Woken	WC02	13051820	11/10/2017
Test S/W	N/A			

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set analyzer center frequency to DTS channel center frequency.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
5. Set the VBW $\geq 3 \times \text{RBW}$.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level within the RBW.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST RESULTS

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/29
Test Mode	TX Mode	Temp. & Humidity	24°C, 58%

IEEE 802.11b Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Limit (dBm)	Result
Low	2412	1.62	8	PASS
Middle	2437	-0.92	8	PASS
High	2462	-1.20	8	PASS

Remark:

1. At final test to get the worst-case emission at 1Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. The maximum antenna gain is 2 dBi which is less than 6dBi, the limit should be 8 dBm.

IEEE 802.11g Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Limit (dBm)	Result
Low	2412	-9.99	8	PASS
Middle	2437	-5.36	8	PASS
High	2462	-10.57	8	PASS

Remark:

1. At final test to get the worst-case emission at 6Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. The maximum antenna gain is 2 dBi which is less than 6dBi, the limit should be 8 dBm.

IEEE 802.11gn HT20 MCS0 Mode

Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Limit (dBm)	Result
Low	2412	-8.30	8	PASS
Middle	2437	-3.45	8	PASS
High	2462	-9.41	8	PASS

Remark:

1. At final test to get the worst-case emission at 6.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. The maximum gain is 2 dBi which is less than 6dBi, the limit should be 8 dBm.

IEEE 802.11gn HT40 MCS0 Mode

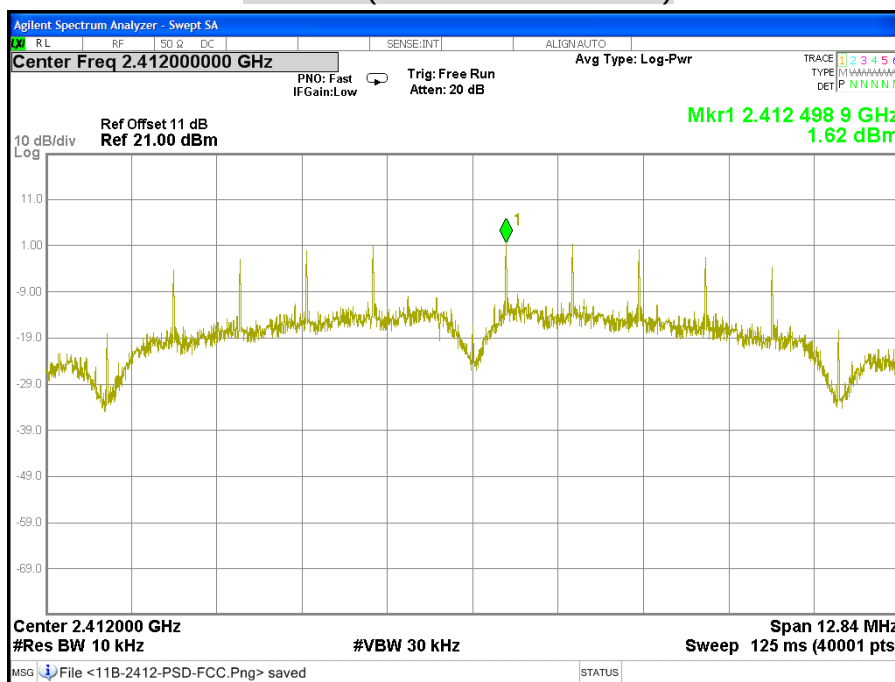
Channel	Channel Frequency (MHz)	Final RF Power Level in 3KHz BW (dBm)	Limit (dBm)	Result
Low	2422	-15.63	8	PASS
Middle	2437	-14.01	8	PASS
High	2452	-14.82	8	PASS

Remark:

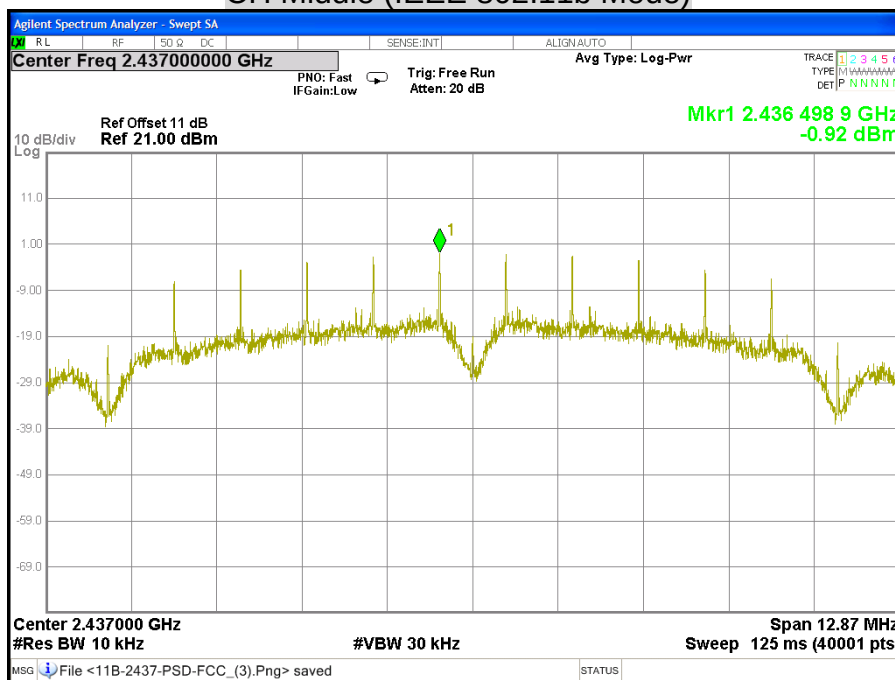
1. At final test to get the worst-case emission at 13.5Mbps.
2. The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.
3. The maximum gain is 2 dBi which is less than 6dBi, the limit should be 8 dBm.

POWER SPECTRAL DENSITY

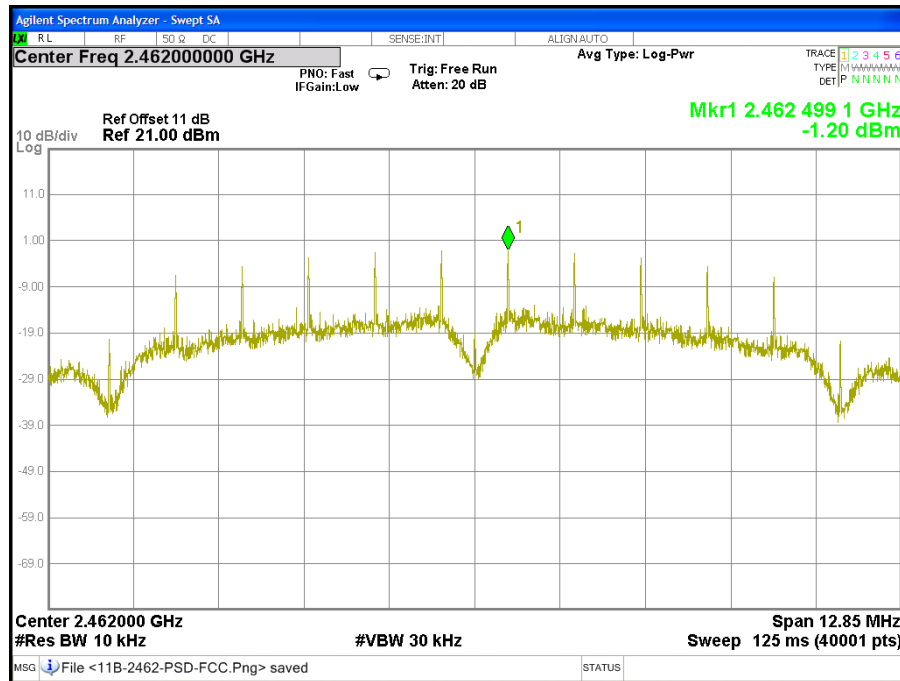
CH Low (IEEE 802.11b Mode)



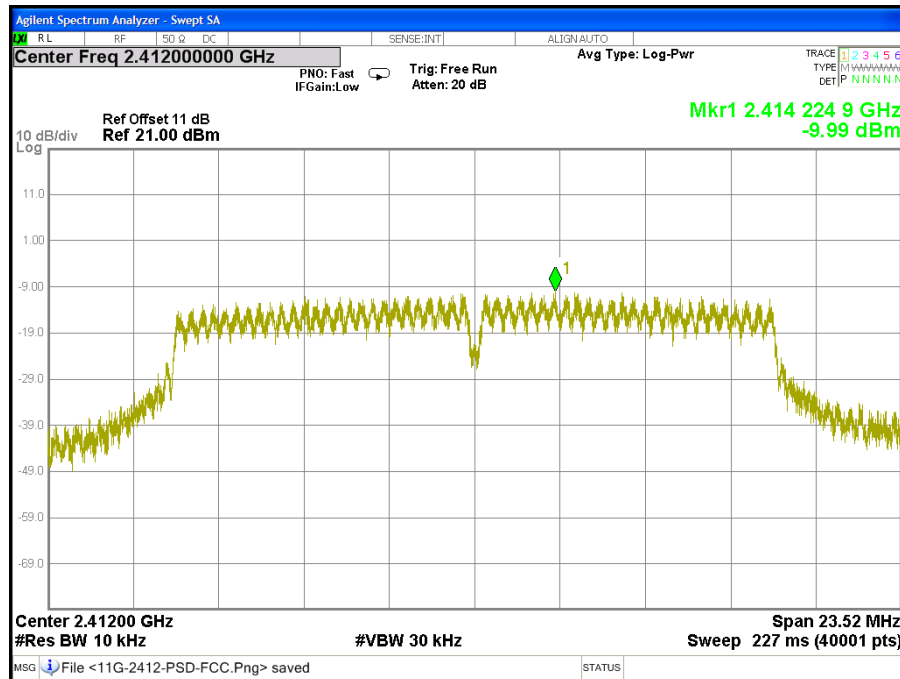
CH Middle (IEEE 802.11b Mode)



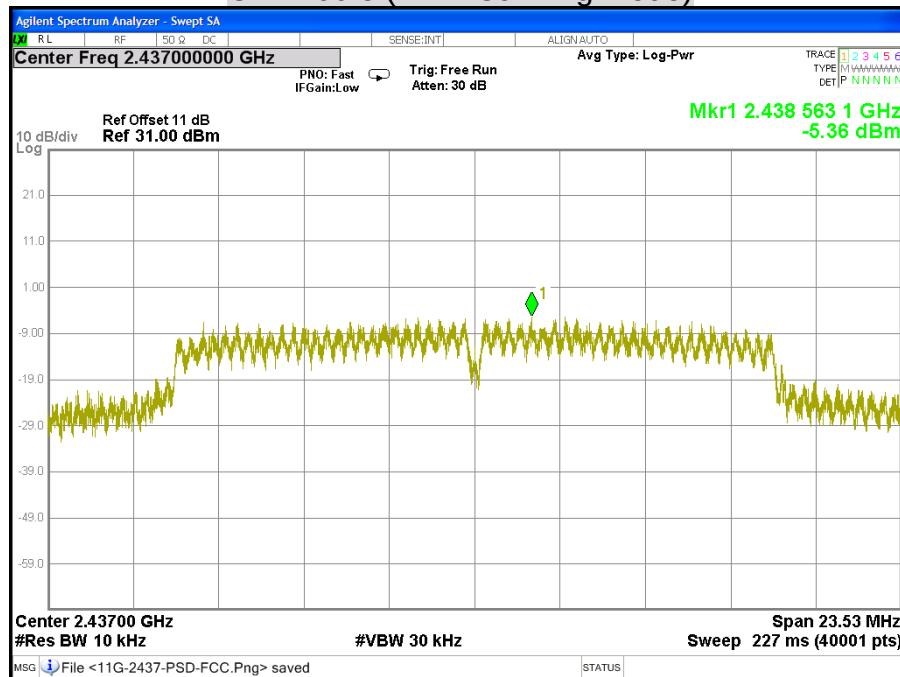
CH High (IEEE 802.11b Mode)



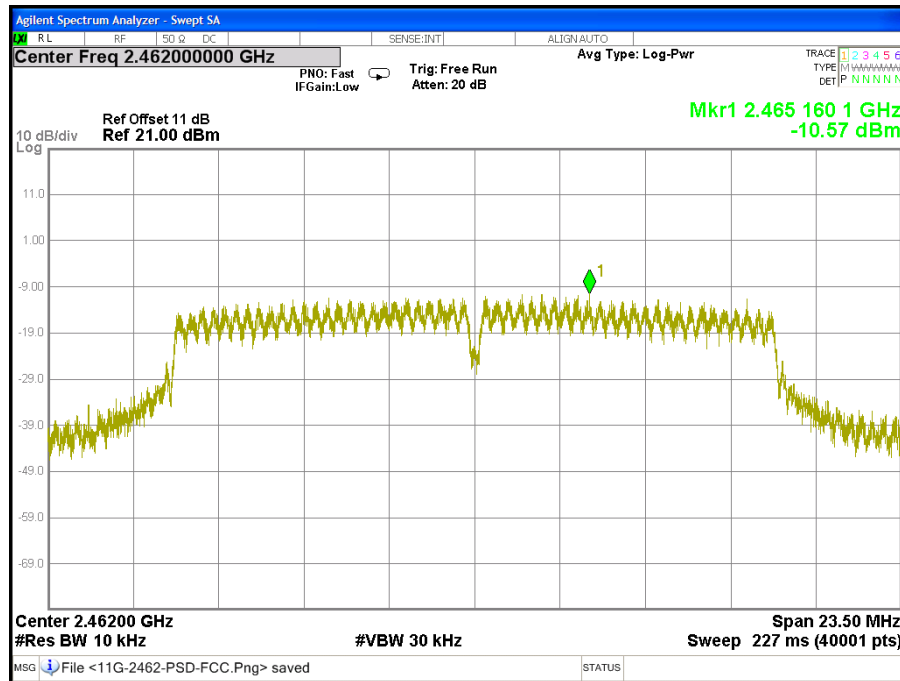
CH Low (IEEE 802.11g Mode)



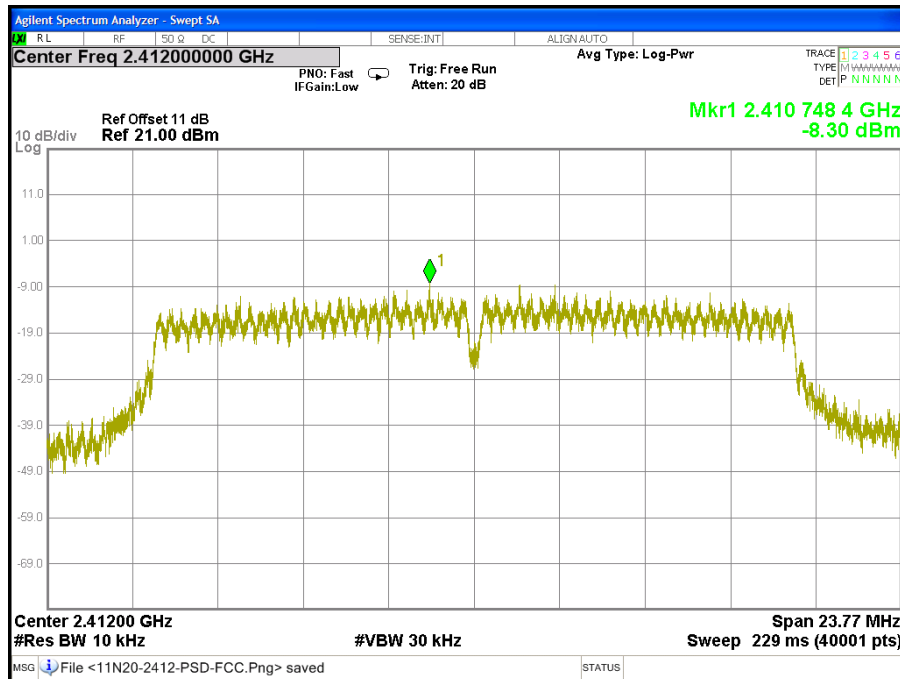
CH Middle (IEEE 802.11g Mode)



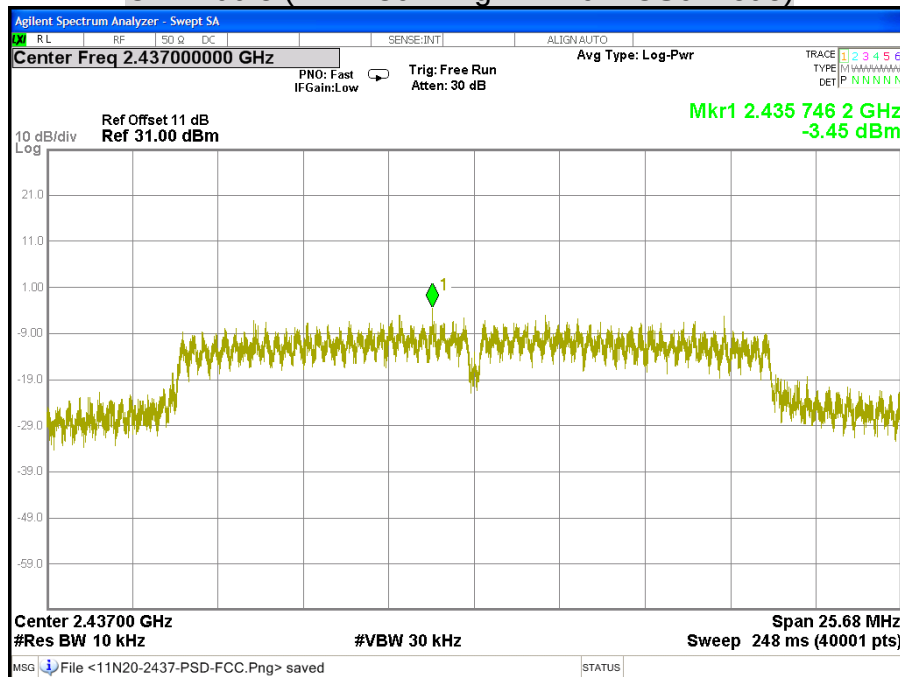
CH High (IEEE 802.11g Mode)



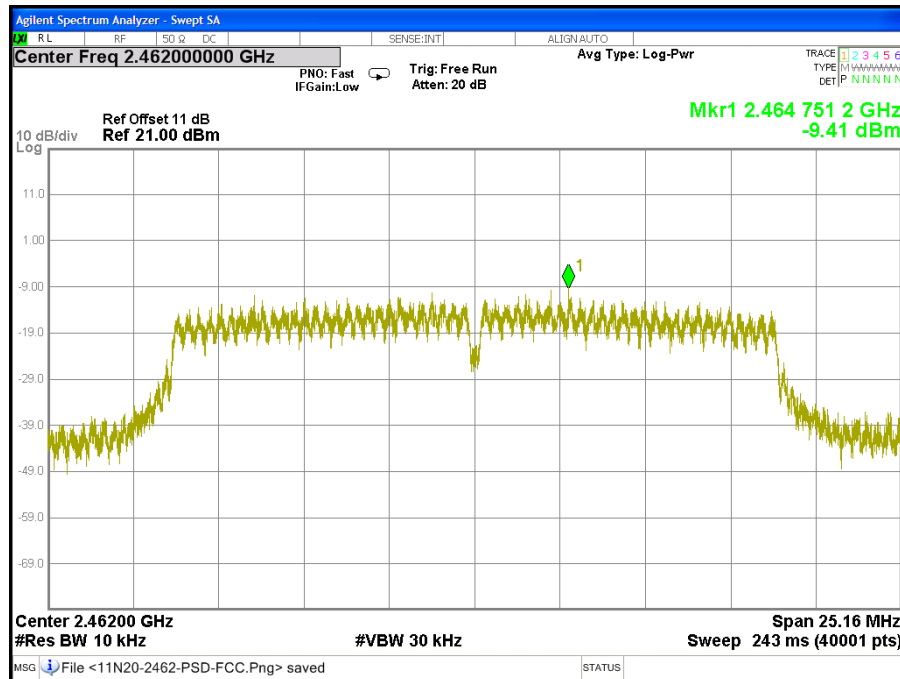
CH Low (IEEE 802.11gn HT20 MCS0 Mode)



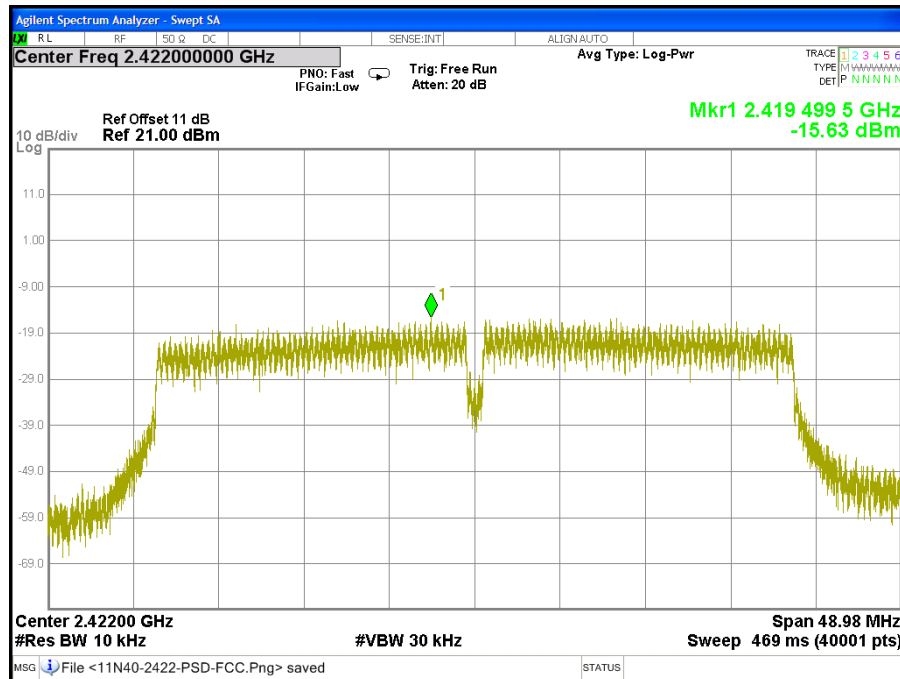
CH Middle (IEEE 802.11gn HT20 MCS0 Mode)



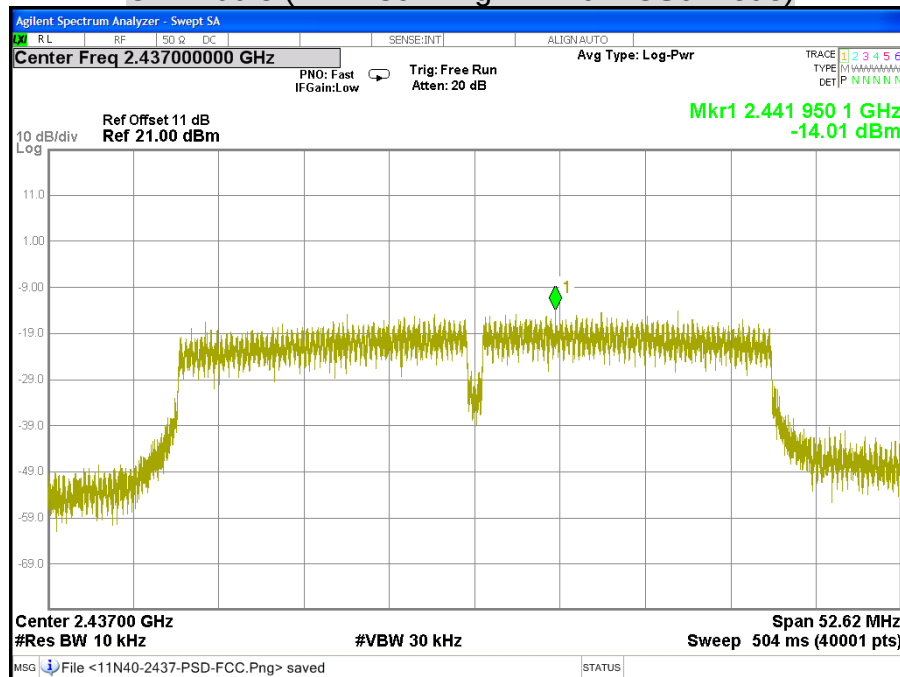
CH High (IEEE 802.11gn HT20 MCS0 Mode)



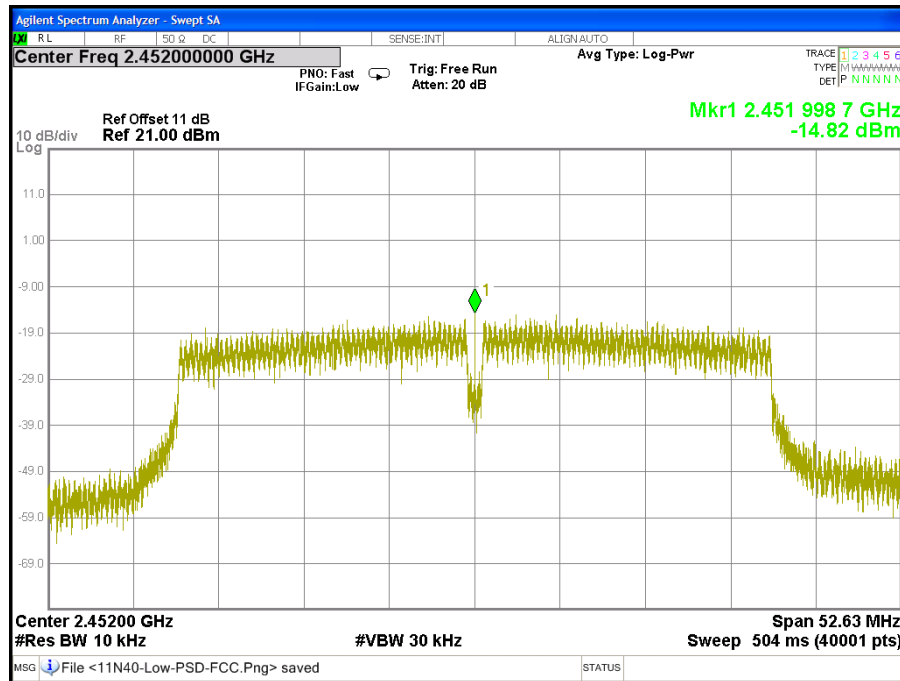
CH Low (IEEE 802.11gn HT40 MCS0 Mode)



CH Middle (IEEE 802.11gn HT40 MCS0 Mode)



CH High (IEEE 802.11gn HT40 MCS0 Mode)



8.6 CONDUCTED SPURIOUS EMISSION

LIMITS

§ 15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EXA Signal Analyzer	Agilent	N9010A	MY52220817	03/07/2018
Attenuator	INMET	18B-10dB	647671	11/10/2017
Cable	Woken	WC02	13051820	11/10/2017
Test S/W	N/A			

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

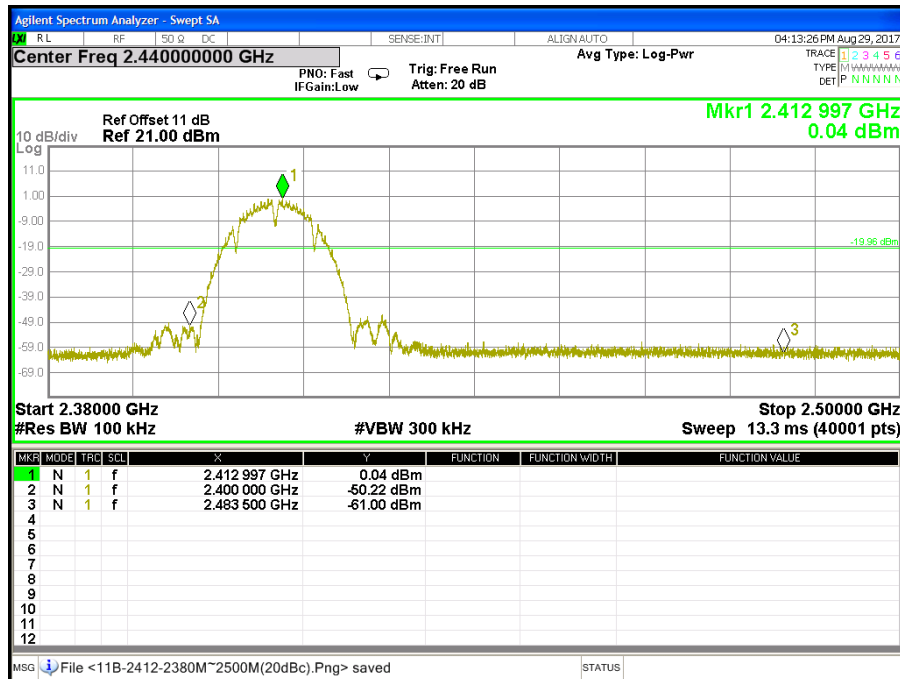
The spectrum from 30 MHz to 26.5 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

TEST RESULTS

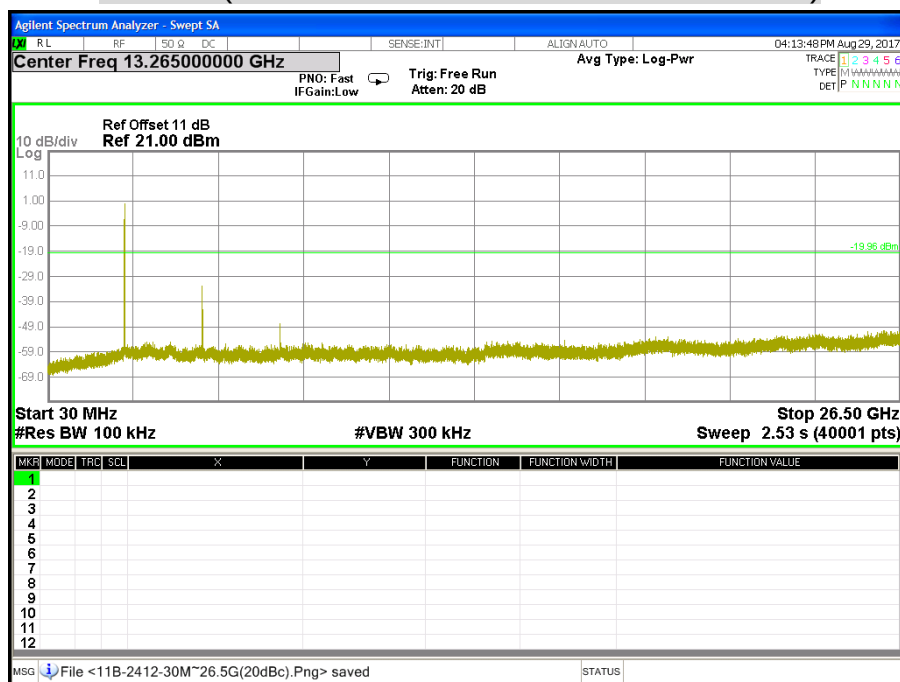
Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/29
Test Mode	TX Mode	Temp. & Humidity	24°C, 58%

OUT-OF-BAND SPURIOUS EMISSIONS-CONDUCTED MEASUREMENT

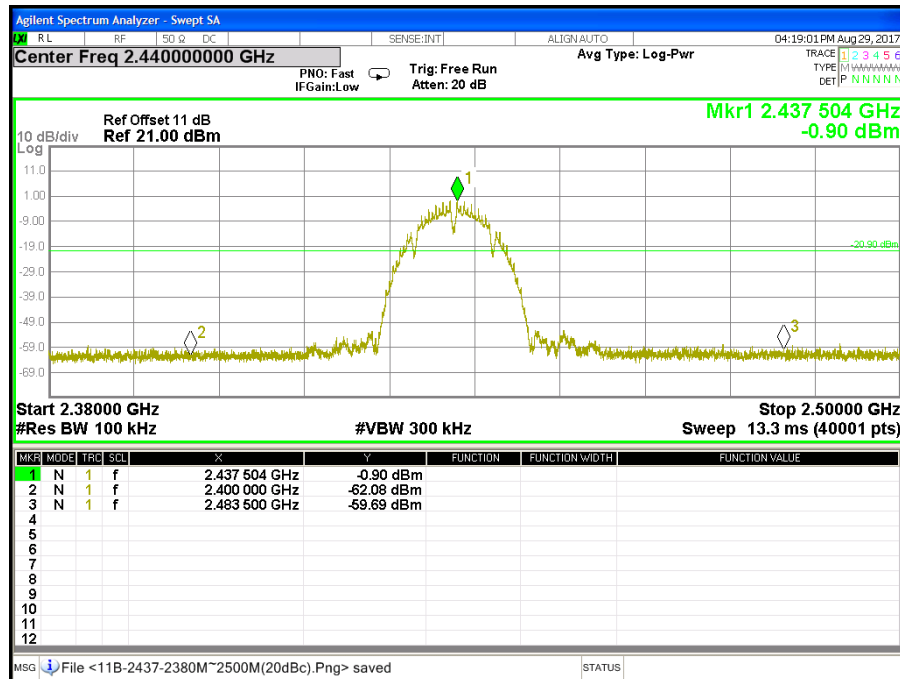
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode)



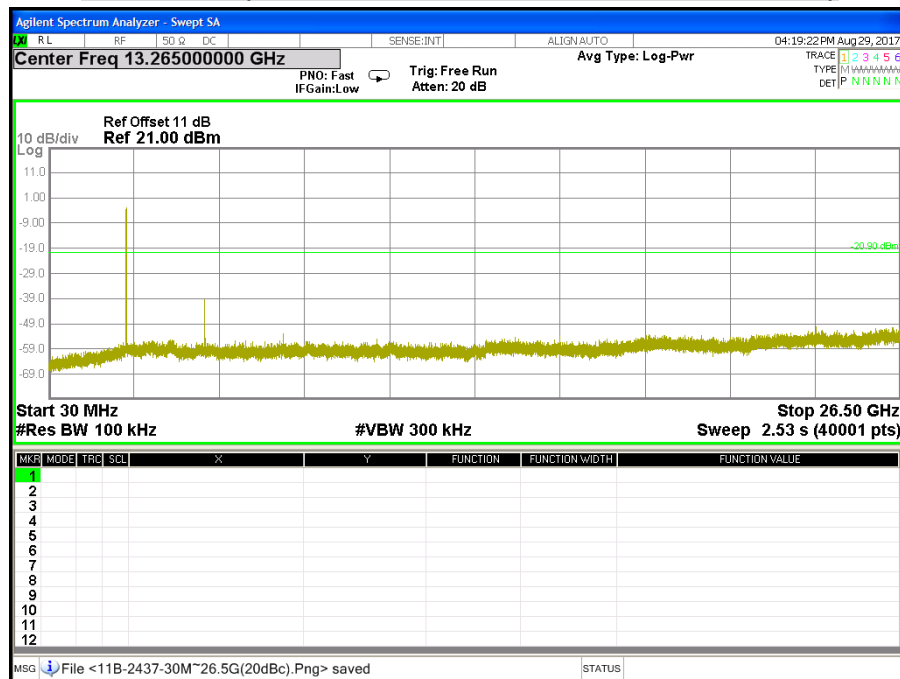
CH Low (30MHz ~ 26.5GHz / IEEE 802.11b Mode)



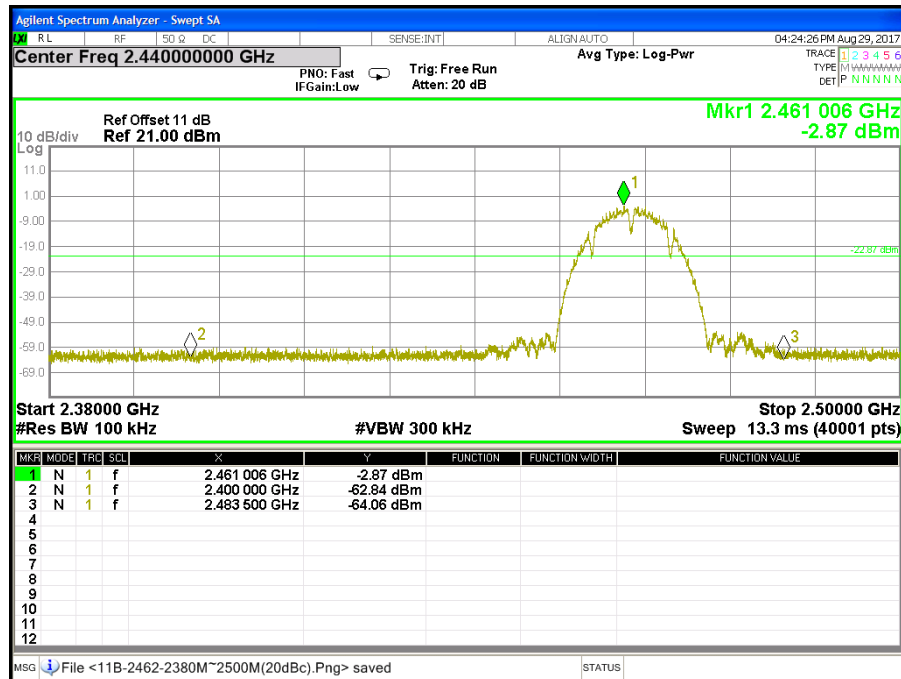
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode)



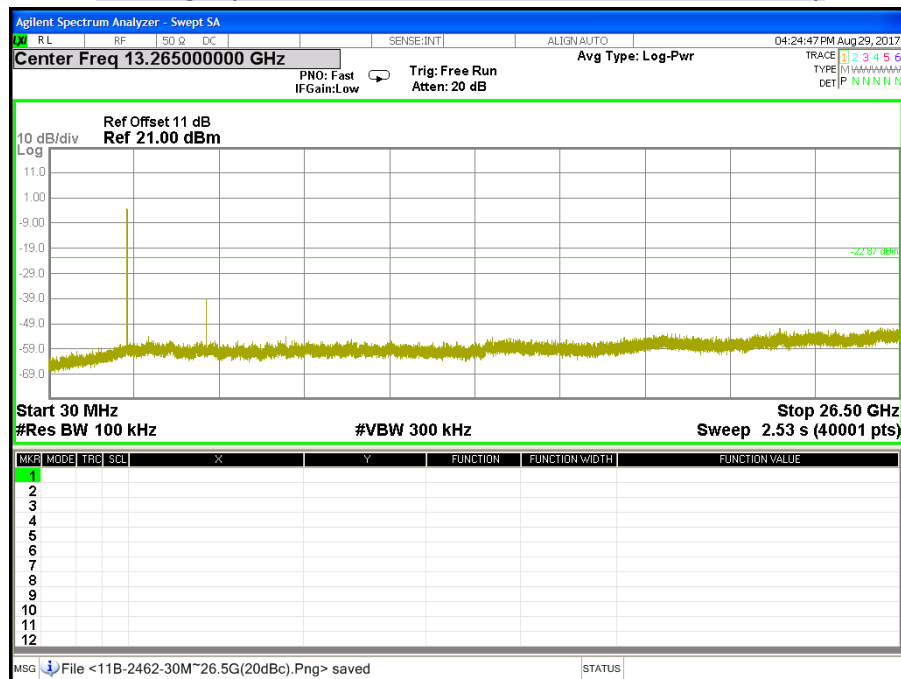
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11b Mode)



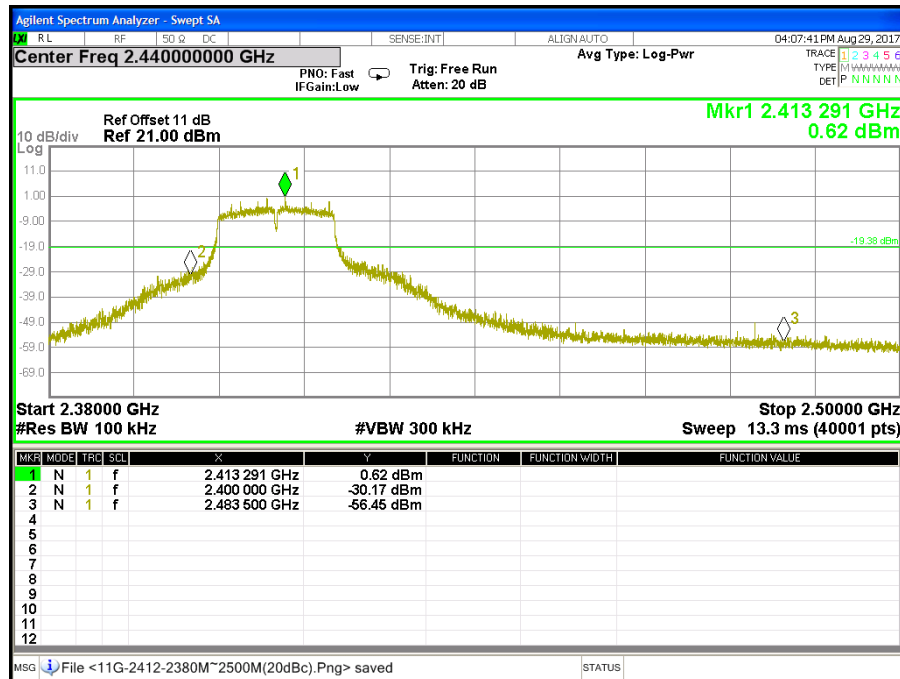
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11b Mode)



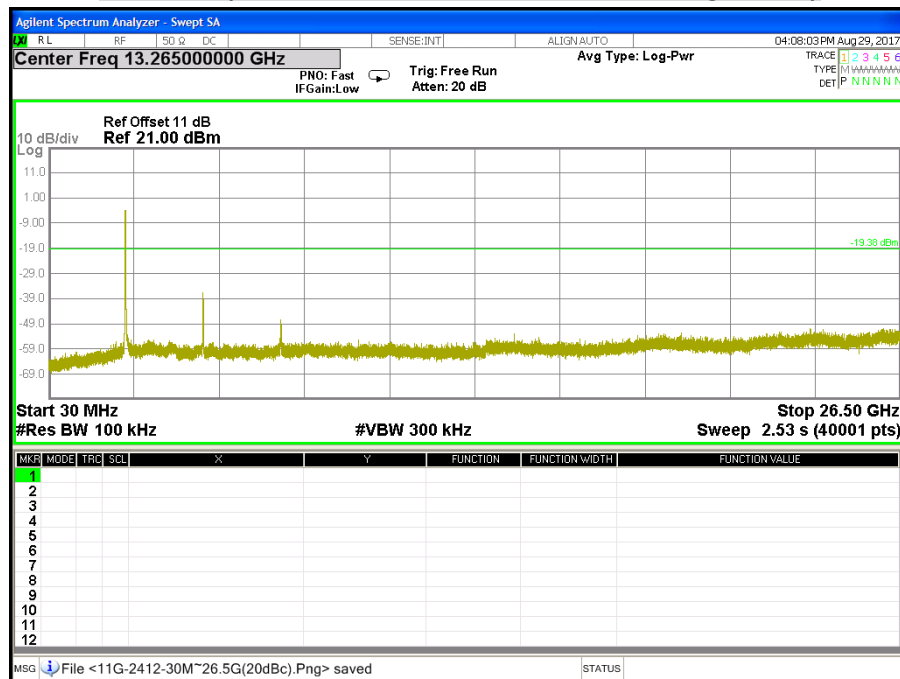
CH High (30MHz ~ 26.5GHz / IEEE 802.11b Mode)



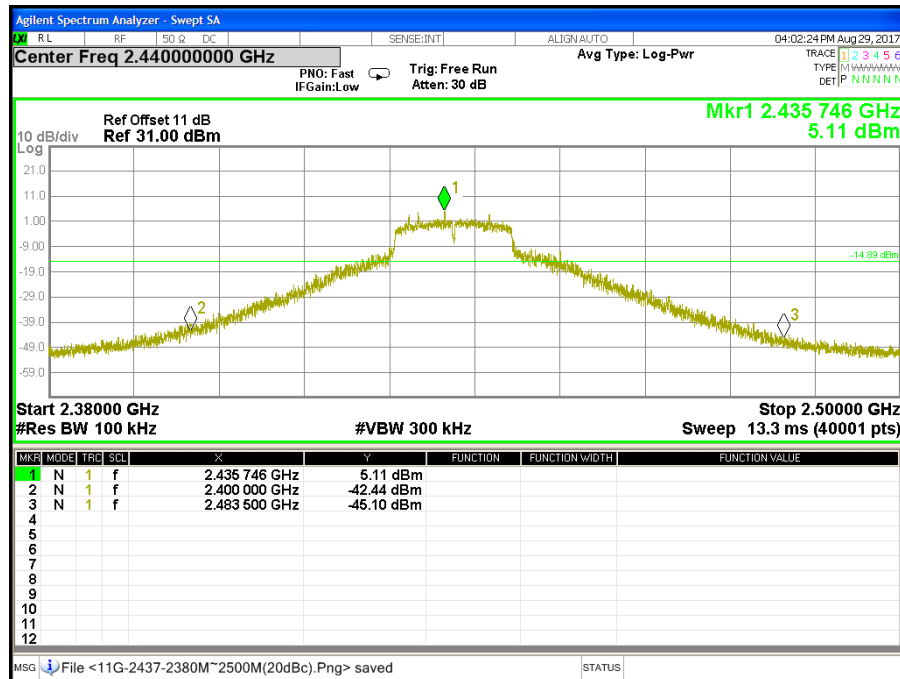
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode)



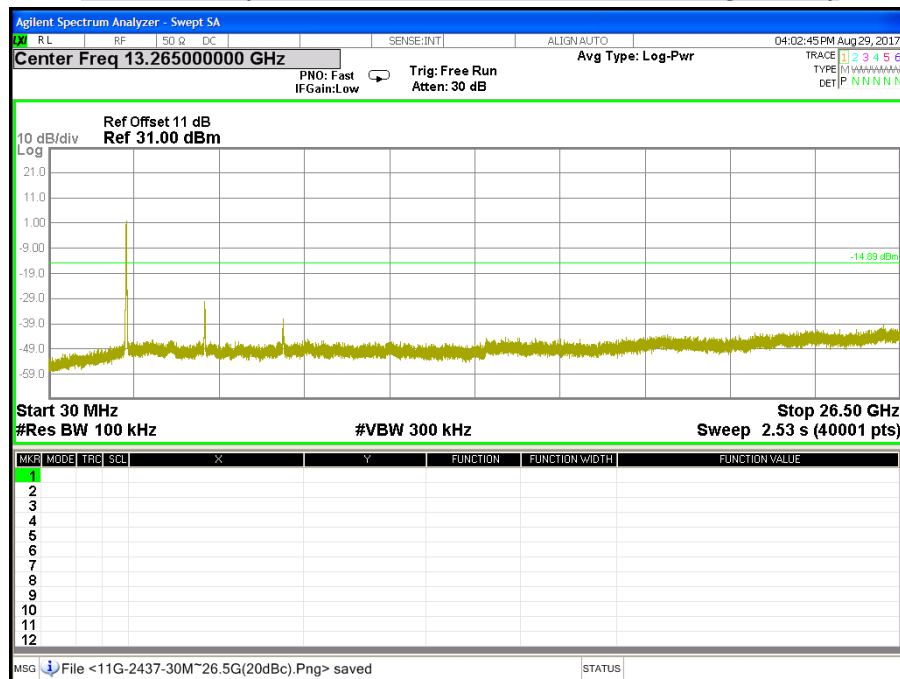
CH Low (30MHz ~ 26.5GHz / IEEE 802.11g Mode)



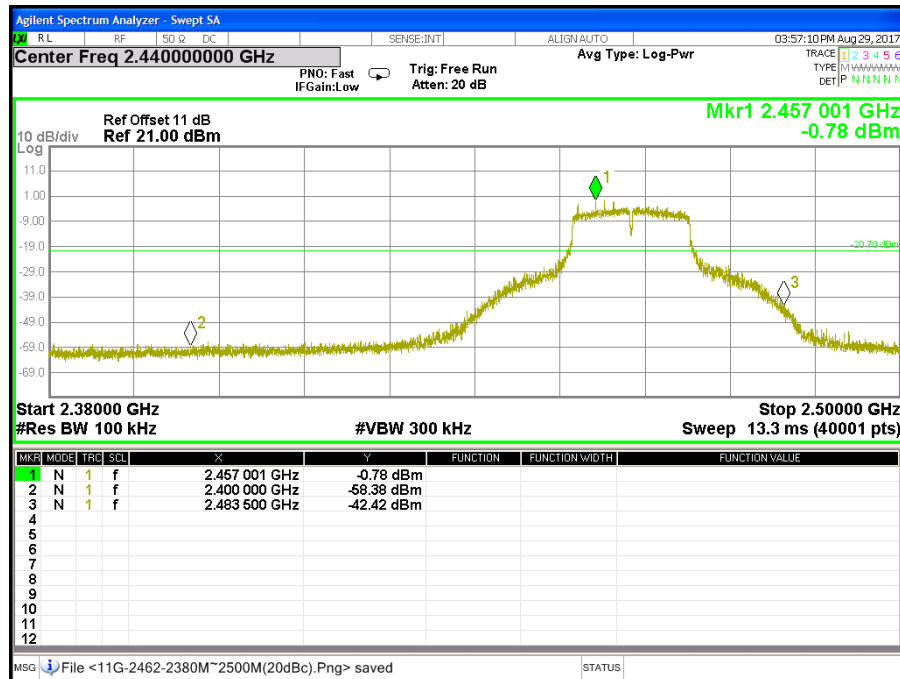
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode)



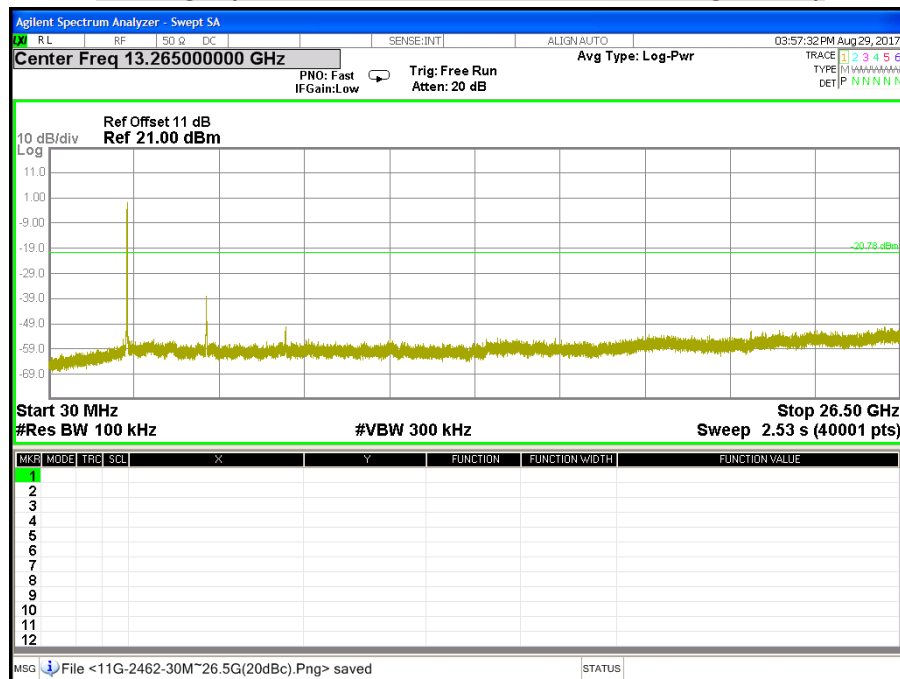
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11g Mode)



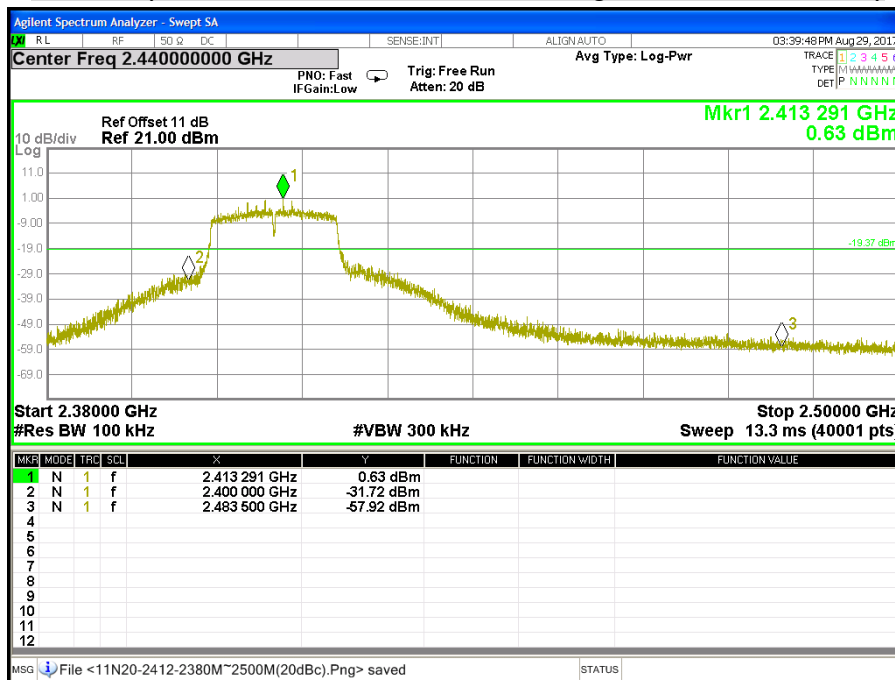
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11g Mode)



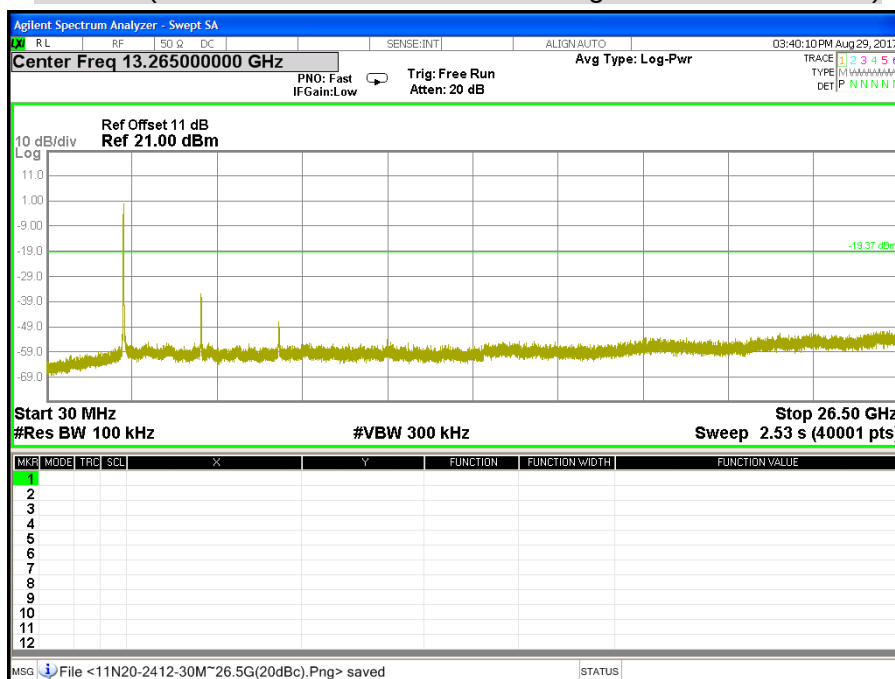
CH High (30MHz ~ 26.5GHz / IEEE 802.11g Mode)



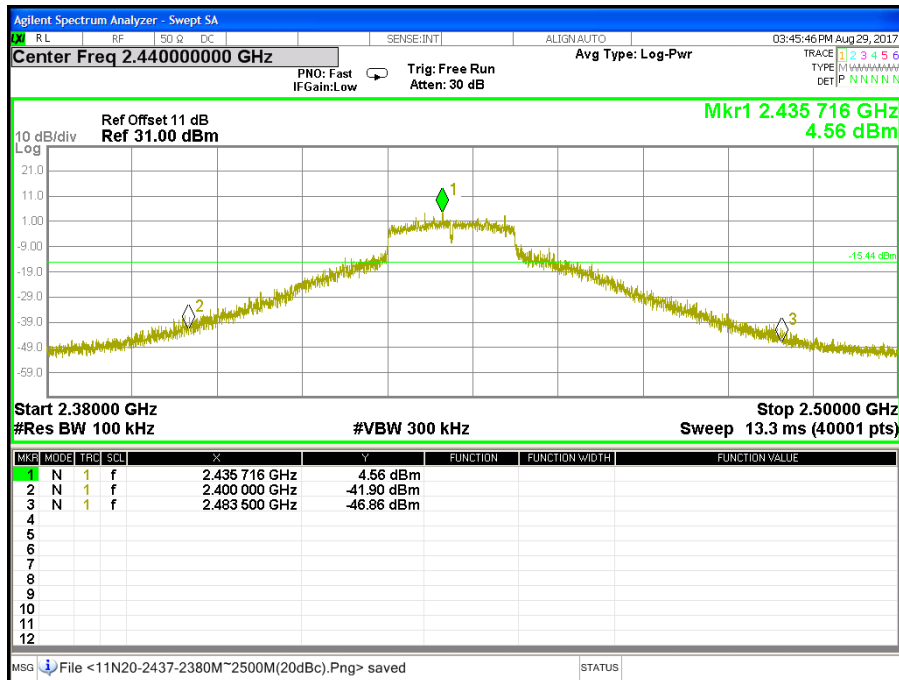
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode)



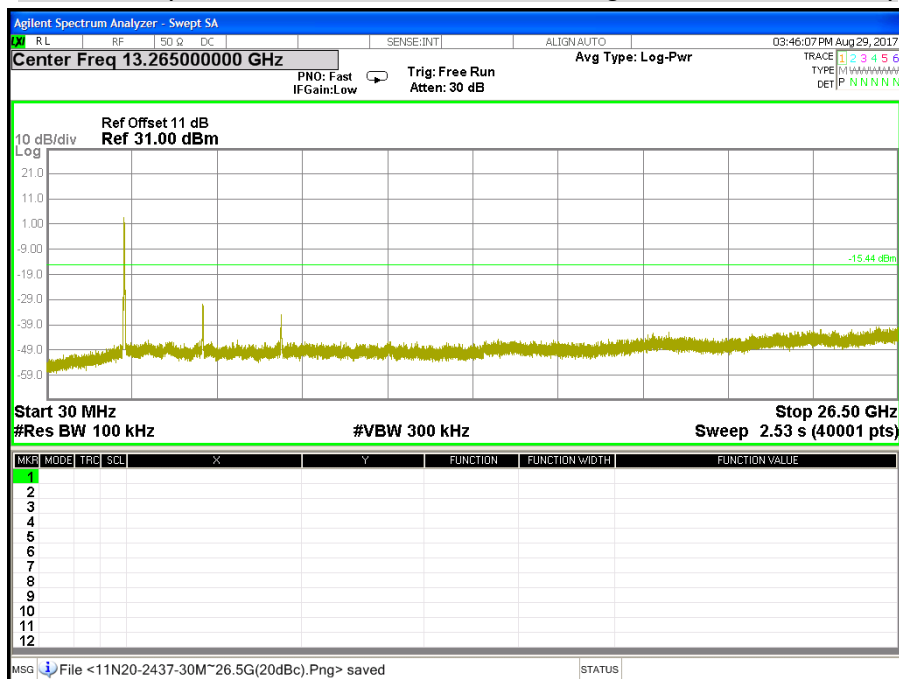
CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode)



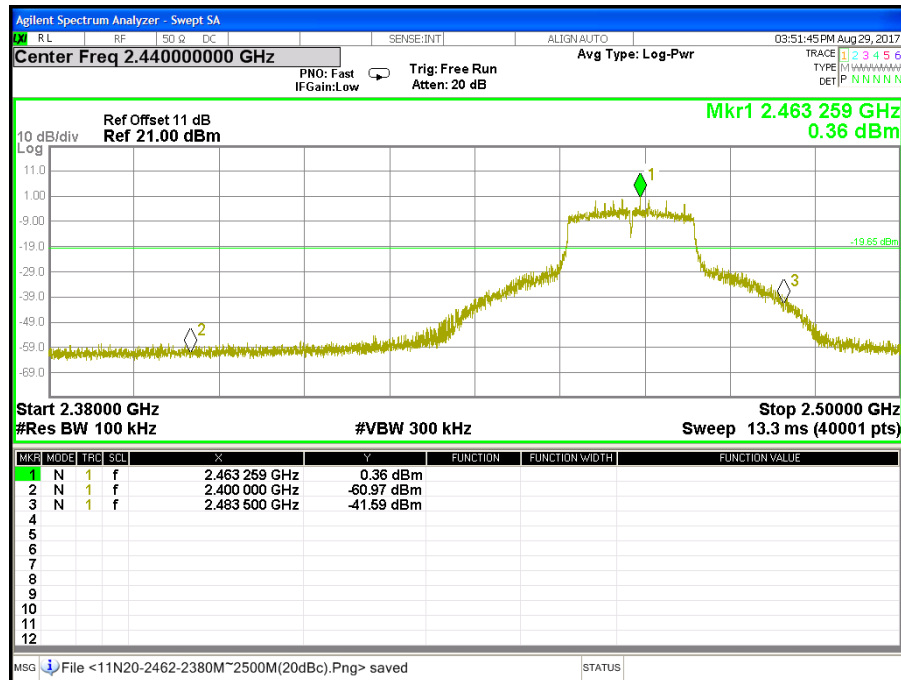
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode)



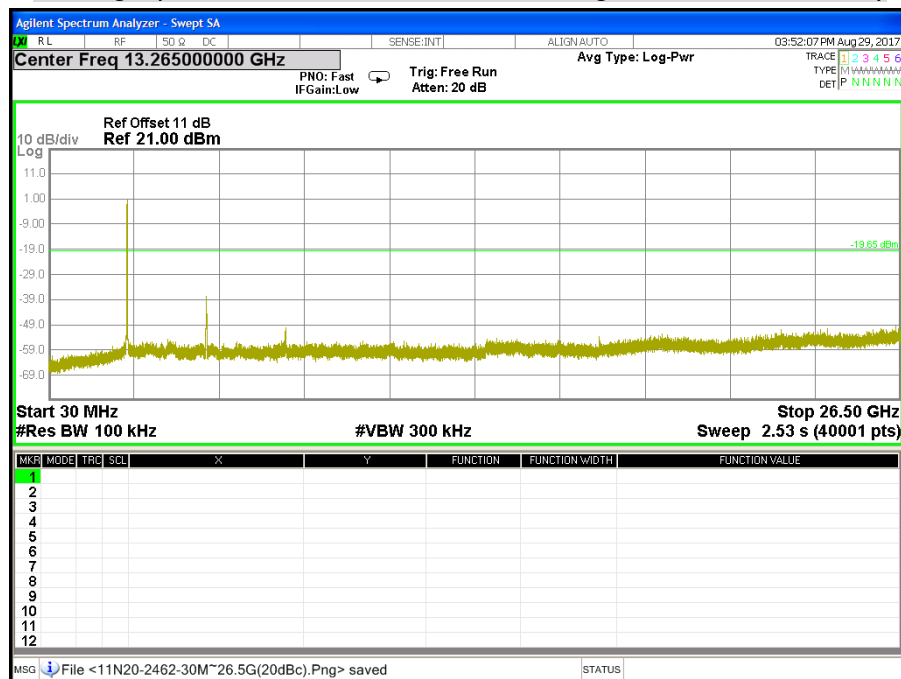
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode)



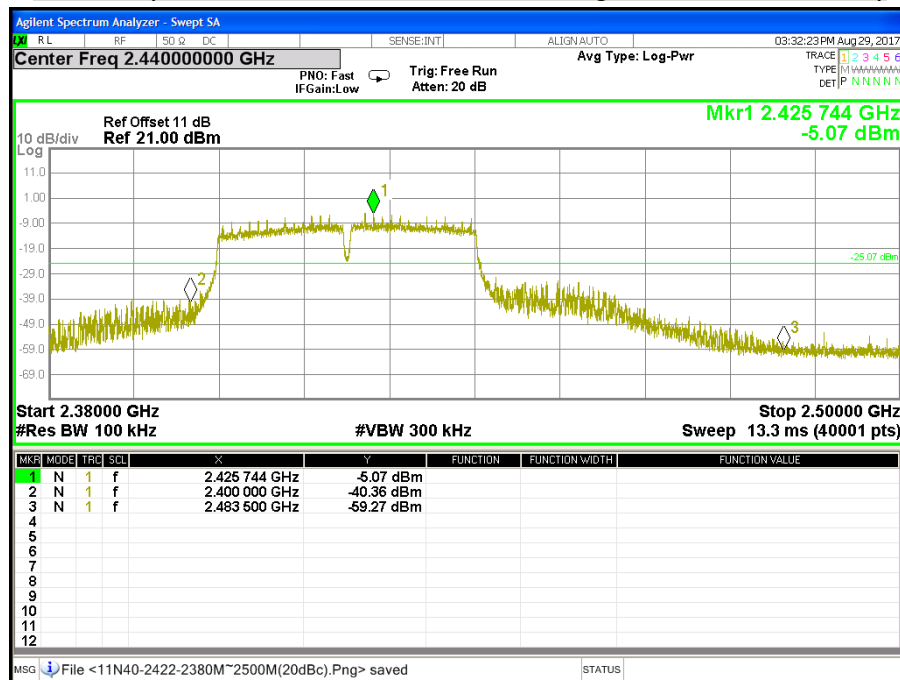
CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT20 MCS0 Mode)



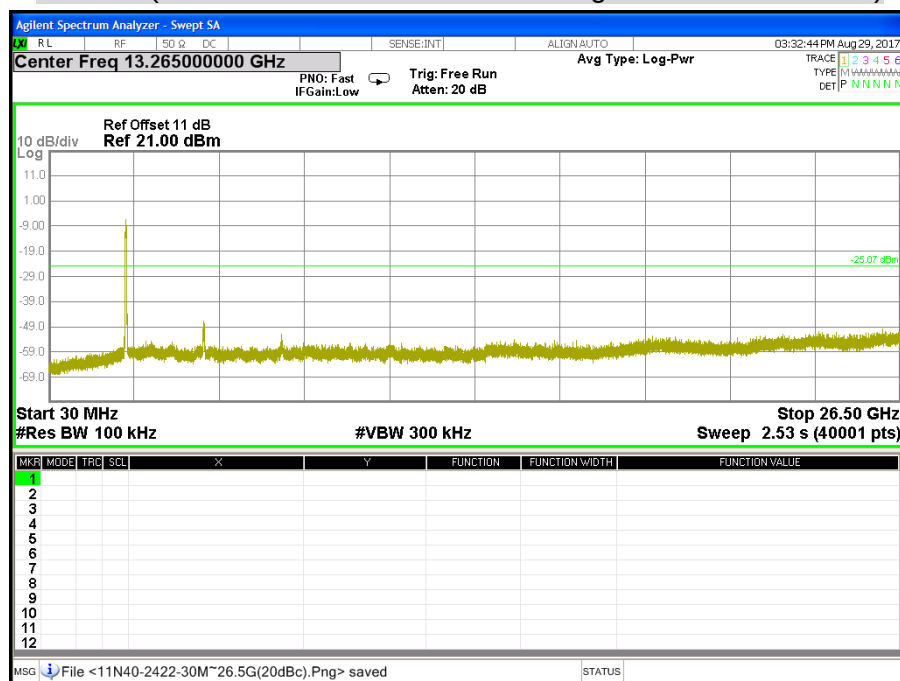
CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT20 MCS0 Mode)



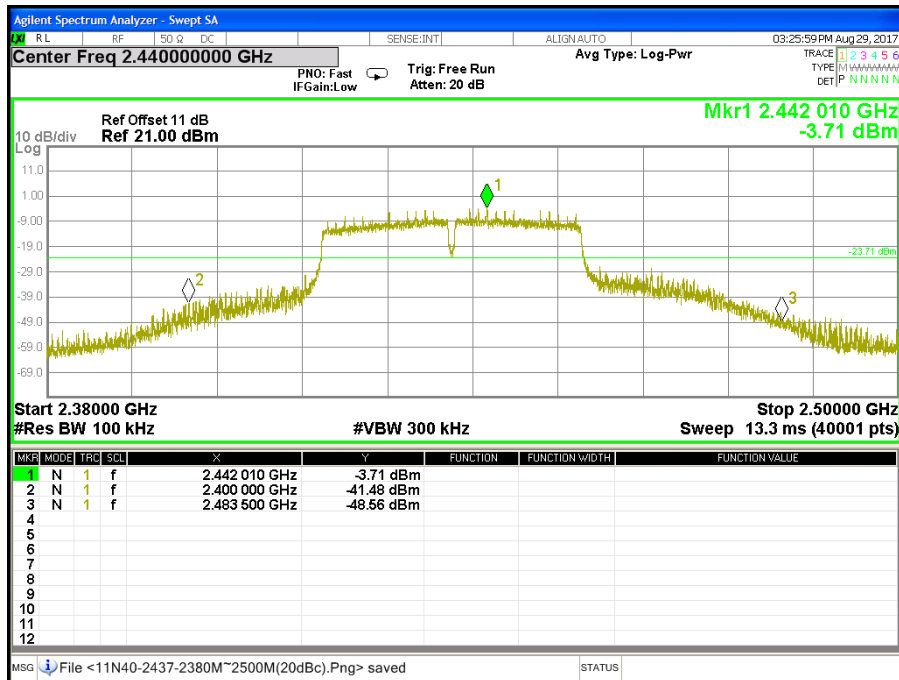
CH Low (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 MCS0 Mode)



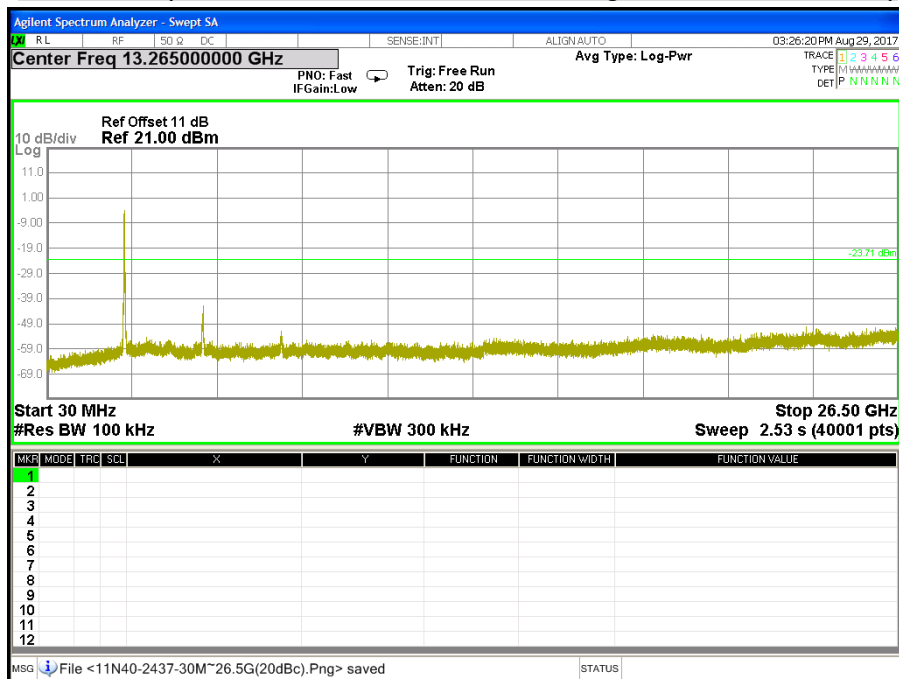
CH Low (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 MCS0 Mode)



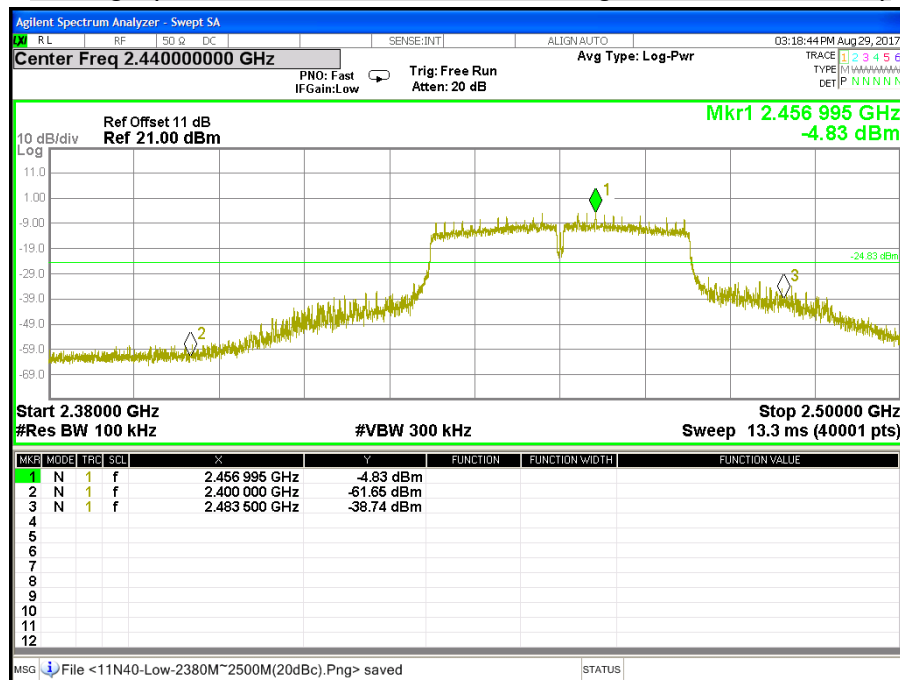
CH Middle (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 MCS0 Mode)



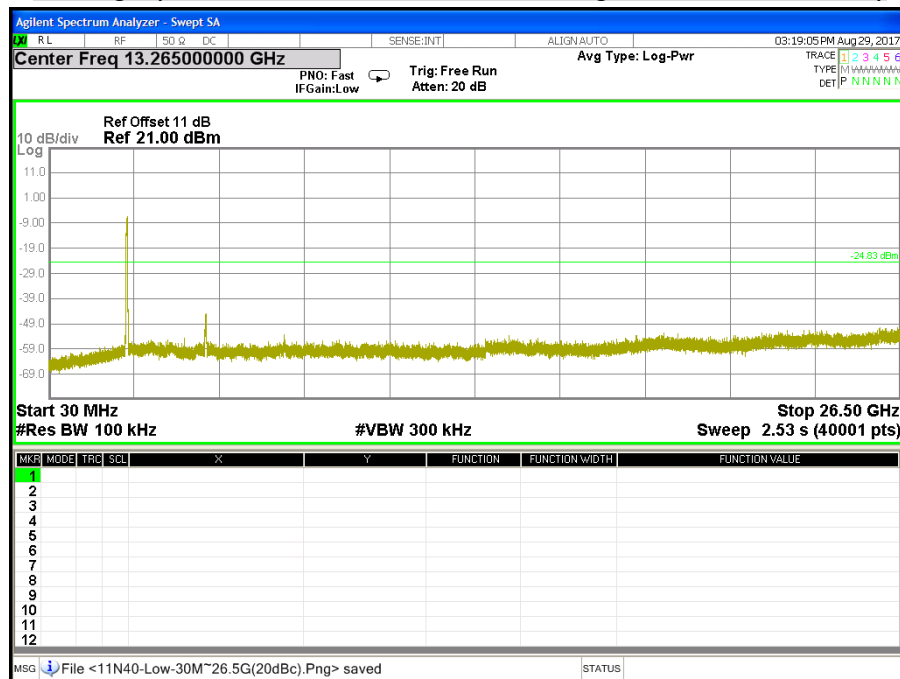
CH Middle (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 MCS0 Mode)



CH High (2.38GHz ~ 2.5GHz / IEEE 802.11gn HT40 MCS0 Mode)



CH High (30MHz ~ 26.5GHz / IEEE 802.11gn HT40 MCS0 Mode)



8.7 RADIATED EMISSION

LIMITS

- (1) According to § 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3338	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

Remark:

- ¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
- ² Above 38.6

- (2) According to § 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

- (3) According to § 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(KHz)	300
0.490 – 1.705	24000/F(KHz)	30
1.705 – 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

Remark: **Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

- (4) According to § 15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST EQUIPMENT

Radiated Emission / 966Chamber_B

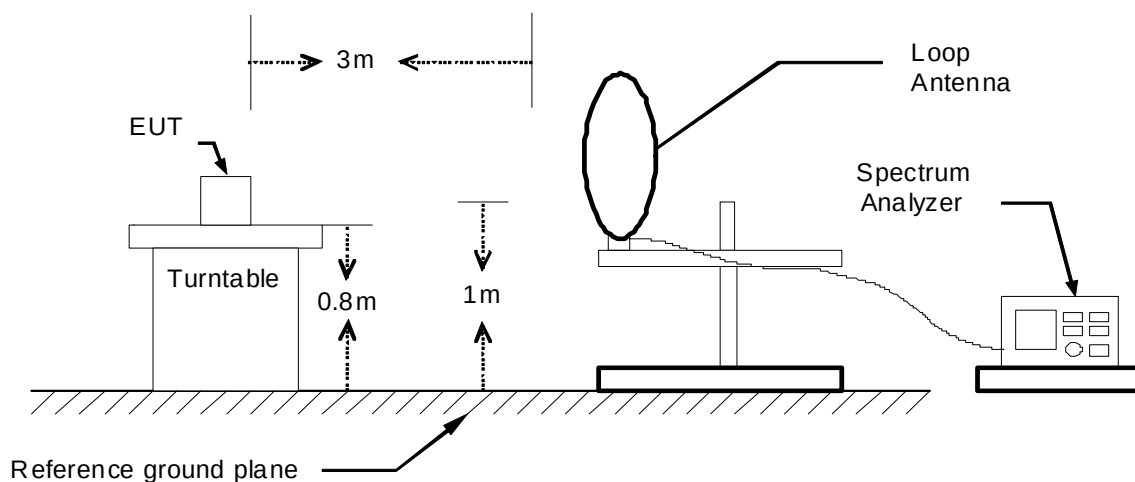
Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360133	03/16/2018
EMI Test Receiver	Rohde & Schwarz	ESCI	101131	03/09/2018
Bi-log Antenna	TESEQ	CBL 6112D	35403	07/10/2018
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-778	07/19/2018
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	11/19/2018
Horn Antenna	COM-POWER	AH-840	03077	11/14/2018
Pre-Amplifier	Agilent	8449B	3008A01471	07/11/2018
Pre-Amplifier	HP	8447F	2944A03748	07/11/2018
LOOP Antenna	COM-POWER	AL-130	121060	05/14/2018
Attenuator	INMET	18B-10dB	647671	11/10/2017
Cable	Woken	WC02	13051820	11/10/2017
Test S/W	E3.815206a			

Remark: Each piece of equipment is scheduled for calibration once a year.

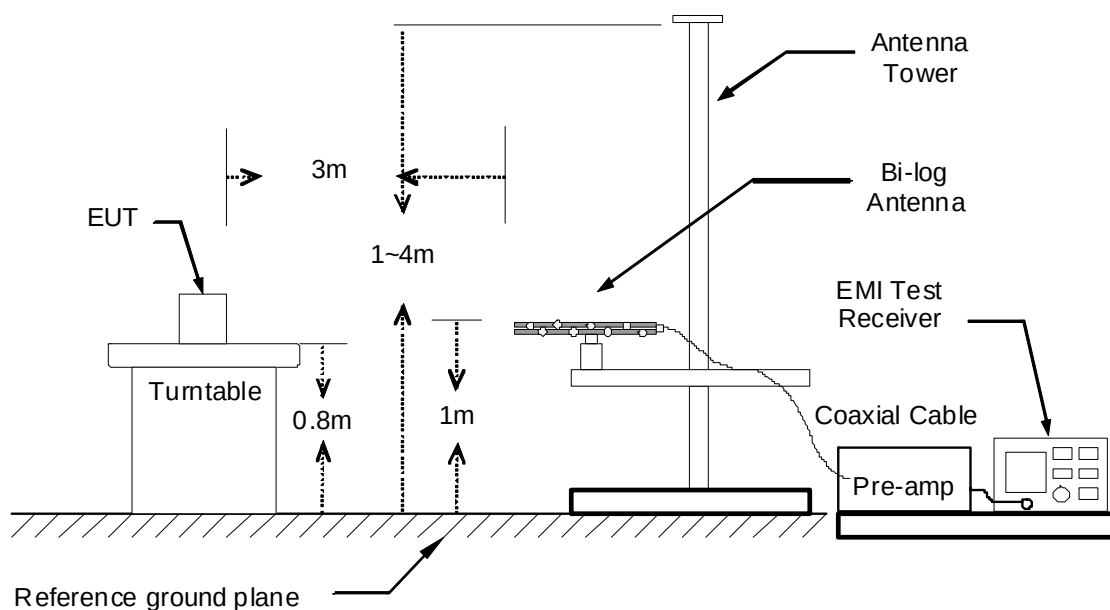
TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission below 1GHz.

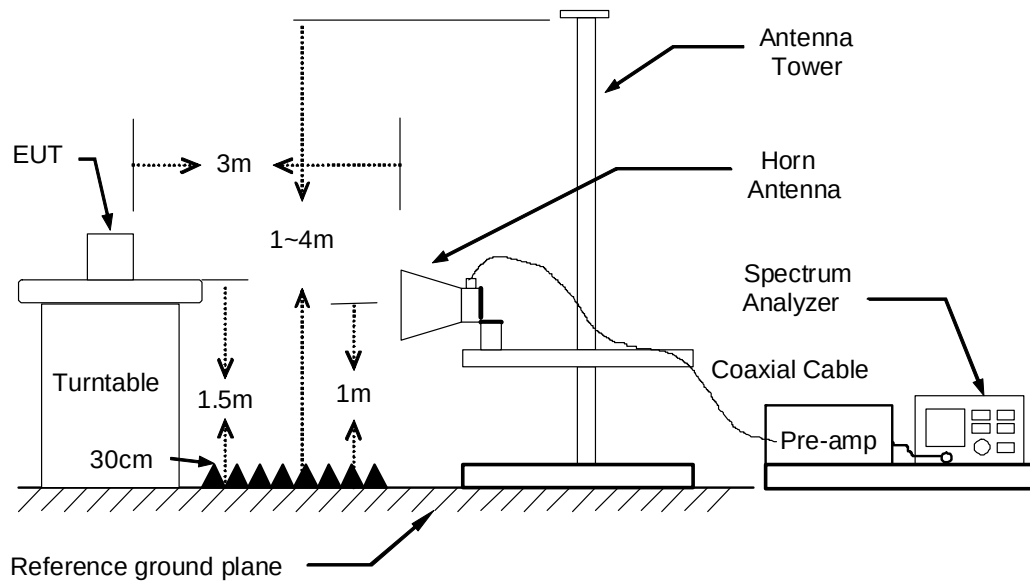
9kHz ~ 30MHz



30MHz ~ 1GHz



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

1. The EUT was placed on the top of a rotating table 0.8 and 1.5 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
2. While measuring the radiated emission below 1GHz, the EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. While measuring the radiated emission above 1GHz, the EUT was set 3 meters away from the interference-receiving antenna.
3. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Remark:

1. *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.*
2. *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1GHz.*
3. *The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.*

TEST RESULTS

Below 1 GHz (9kHz ~ 30MHz)

No emission found between lowest internal used/generated frequency to 30MHz.

Below 1 GHz (30MHz ~ 1GHz)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/29
Test Mode	Mode 1	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
51.34	48.82	-15.41	33.41	40.00	-6.59	49	200	Peak
137.67	40.51	-11.09	29.42	43.50	-14.08	138	200	Peak
213.33	45.95	-12.51	33.44	43.50	-10.06	283	100	Peak
242.43	48.81	-9.85	38.96	46.00	-7.04	136	100	Peak
315.18	47.49	-7.71	39.78	46.00	-6.22	309	100	Peak
447.10	38.01	-4.99	33.02	46.00	-12.98	337	100	Peak
630.43	34.78	-2.75	32.03	46.00	-13.97	286	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
=====								
36.79	43.15	-8.43	34.72	40.00	-5.28	343	100	Peak
45.52	44.90	-13.27	31.63	40.00	-8.37	334	100	QP
50.37	45.80	-15.26	30.54	40.00	-9.46	220	100	QP
243.40	42.55	-9.74	32.81	46.00	-13.19	156	200	Peak
309.36	39.88	-7.83	32.05	46.00	-13.95	228	100	Peak
540.22	34.80	-3.16	31.64	46.00	-14.36	123	100	Peak
589.69	34.41	-2.98	31.43	46.00	-14.57	85	100	Peak

Remark:

1. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) – PreAmp.Gain (dB)
3. Result (dBuV/m) = Reading (dBuV) + Correction Factor (dB/m)
4. Margin (dB) = Remark result (dBuV/m) - Quasi-peak limit (dBuV/m).

Above 1 GHz

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11b Mode / TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1796.00	49.91	-5.25	44.66	74.00	-29.34	133	100	Peak
2494.00	45.54	-2.05	43.49	74.00	-30.51	300	100	Peak
4824.00	42.74	4.72	47.46	74.00	-26.54	238	200	Peak
4986.00	45.05	5.05	50.10	74.00	-23.90	139	100	Peak
7320.00	36.66	12.18	48.84	74.00	-25.16	230	100	Peak
8760.00	35.87	13.62	49.49	74.00	-24.51	223	100	Peak
9660.00	36.36	14.65	51.01	74.00	-22.99	302	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1786.00	53.34	-5.30	48.04	74.00	-25.96	140	200	Peak
2496.00	50.39	-2.04	48.35	74.00	-25.65	126	100	Peak
4824.00	46.77	4.72	51.49	74.00	-22.51	164	200	Peak
4977.00	27.30	5.03	32.33	54.00	-21.67	146	100	Average
4977.00	51.95	5.03	56.98	74.00	-17.02	146	100	Peak
7236.00	37.39	11.92	49.31	74.00	-24.69	126	100	Peak
8304.00	36.51	12.89	49.40	74.00	-24.60	291	200	Peak
9636.00	36.13	14.56	50.69	74.00	-23.31	218	100	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11b Mode / TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2266.00	47.17	-3.08	44.09	74.00	-29.91	216	100	Peak
2494.00	49.67	-2.05	47.62	74.00	-26.38	338	100	Peak
4875.00	41.89	4.82	46.71	74.00	-27.29	106	200	Peak
4980.00	43.15	5.04	48.19	74.00	-25.81	267	200	Peak
6696.00	36.81	11.04	47.85	74.00	-26.15	32	200	Peak
8100.00	35.46	12.74	48.20	74.00	-25.80	150	100	Peak
9900.00	36.39	15.62	52.01	74.00	-21.99	22	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2380.00	49.08	-2.56	46.52	74.00	-27.48	128	100	Peak
2492.00	49.72	-2.06	47.66	74.00	-26.34	131	100	Peak
4875.00	44.00	4.82	48.82	74.00	-25.18	216	200	Peak
4989.00	27.50	5.06	32.56	54.00	-21.44	141	100	Average
4989.00	52.85	5.06	57.91	74.00	-16.09	141	100	Peak
6648.00	36.91	11.02	47.93	74.00	-26.07	49	200	Peak
8328.00	37.00	12.91	49.91	74.00	-24.09	142	100	Peak
9936.00	35.94	15.76	51.70	74.00	-22.30	185	200	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11b Mode / TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1642.00	47.64	-5.97	41.67	74.00	-32.33	289	100	Peak
2252.00	46.63	-3.15	43.48	74.00	-30.52	220	100	Peak
4923.00	40.19	4.92	45.11	74.00	-28.89	238	200	Peak
4980.00	40.87	5.04	45.91	74.00	-28.09	352	100	Peak
6444.00	36.32	10.93	47.25	74.00	-26.75	4	100	Peak
7368.00	36.69	12.33	49.02	74.00	-24.98	126	200	Peak
9024.00	36.27	14.15	50.42	74.00	-23.58	67	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1782.00	54.41	-5.31	49.10	74.00	-24.90	143	200	Peak
2388.00	48.75	-2.53	46.22	74.00	-27.78	141	100	Peak
4923.00	45.16	4.92	50.08	74.00	-23.92	147	100	Peak
5004.00	27.15	5.10	32.25	54.00	-21.75	102	100	Average
5004.00	52.54	5.10	57.64	74.00	-16.36	102	100	Peak
6600.00	36.83	11.00	47.83	74.00	-26.17	232	200	Peak
7392.00	36.96	12.40	49.36	74.00	-24.64	139	100	Peak
9000.00	35.98	14.16	50.14	74.00	-23.86	130	100	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11g Mode / TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1790.00	49.35	-5.28	44.07	74.00	-29.93	241	100	Peak
2496.00	47.55	-2.04	45.51	74.00	-28.49	79	100	Peak
4818.00	41.90	4.71	46.61	74.00	-27.39	104	200	Peak
4998.00	44.68	5.08	49.76	74.00	-24.24	139	100	Peak
6636.00	36.31	11.01	47.32	74.00	-26.68	60	200	Peak
8304.00	37.33	12.89	50.22	74.00	-23.78	191	200	Peak
9936.00	36.21	15.76	51.97	74.00	-22.03	214	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1798.00	50.55	-5.24	45.31	74.00	-28.69	136	200	Peak
2494.00	51.19	-2.05	49.14	74.00	-24.86	130	100	Peak
4818.00	45.97	4.71	50.68	74.00	-23.32	157	200	Peak
4977.00	27.60	5.03	32.63	54.00	-21.37	150	100	Average
4977.00	51.48	5.03	56.51	74.00	-17.49	150	100	Peak
7236.00	40.46	11.92	52.38	74.00	-21.62	142	100	Peak
8520.00	37.04	13.08	50.12	74.00	-23.88	187	100	Peak
10128.00	35.99	16.11	52.10	74.00	-21.90	209	200	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor

Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11g Mode / TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	47.40	-2.52	44.88	54.00	-9.12	251	200	Average
2390.00	61.32	-2.52	58.80	74.00	-15.20	251	200	Peak
2483.50	45.60	-2.09	43.51	54.00	-10.49	247	160	Average
2483.50	58.39	-2.09	56.30	74.00	-17.70	247	200	Peak
4875.00	45.60	4.82	50.42	54.00	-3.58	174	200	Average
4875.00	51.81	4.82	56.63	74.00	-17.37	174	200	Peak
4983.00	42.47	5.04	47.51	74.00	-26.49	198	100	Peak
7308.00	38.29	12.14	50.43	74.00	-23.57	210	100	Peak
8400.00	36.31	12.96	49.27	74.00	-24.73	329	100	Peak
9660.00	36.41	14.65	51.06	74.00	-22.94	160	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	53.62	-2.52	51.10	74.00	-22.90	215	200	Peak
2483.50	44.90	-2.09	42.81	54.00	-11.19	210	200	Average
2483.50	57.71	-2.09	55.62	74.00	-18.38	210	200	Peak
4401.00	47.66	3.71	51.37	74.00	-22.63	152	100	Peak
4875.00	48.60	4.82	53.42	54.00	-0.58	164	158	Average
4875.00	55.47	4.82	60.29	74.00	-13.71	164	200	Peak
4983.00	28.00	5.04	33.04	54.00	-20.96	143	100	Average
4983.00	51.99	5.04	57.03	74.00	-16.97	143	100	Peak
7308.00	34.35	12.14	46.49	54.00	-7.51	139	100	Average
7308.00	41.98	12.14	54.12	74.00	-19.88	139	100	Peak
8544.00	36.40	13.14	49.54	74.00	-24.46	81	200	Peak
9696.00	35.37	14.80	50.17	74.00	-23.83	19	100	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11g Mode / TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2250.00	47.98	-3.15	44.83	74.00	-29.17	221	100	Peak
2390.00	40.23	-2.52	37.71	74.00	-36.29	255	100	Peak
4914.00	43.38	4.90	48.28	74.00	-25.72	253	200	Peak
4989.00	42.83	5.06	47.89	74.00	-26.11	156	200	Peak
7380.00	36.67	12.37	49.04	74.00	-24.96	244	200	Peak
8520.00	36.75	13.08	49.83	74.00	-24.17	244	200	Peak
9576.00	36.30	14.32	50.62	74.00	-23.38	78	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2250.00	48.89	-3.15	45.74	74.00	-28.26	86	100	Peak
2390.00	40.63	-2.52	38.11	74.00	-35.89	301	100	Peak
4917.00	42.10	4.91	47.01	54.00	-6.99	155	160	Average
4917.00	48.21	4.91	53.12	74.00	-20.88	155	200	Peak
4995.00	27.70	5.07	32.77	54.00	-21.23	142	100	Average
4995.00	50.09	5.07	55.16	74.00	-18.84	142	100	Peak
7392.00	36.38	12.40	48.78	74.00	-25.22	240	200	Peak
8328.00	36.70	12.91	49.61	74.00	-24.39	188	200	Peak
9636.00	35.75	14.56	50.31	74.00	-23.69	325	100	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11gn HT20 MCS0 Mode / TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1792.00	49.89	-5.27	44.62	74.00	-29.38	307	100	Peak
2496.00	47.65	-2.04	45.61	74.00	-28.39	256	200	Peak
4824.00	42.76	4.72	47.48	74.00	-26.52	101	200	Peak
4986.00	45.79	5.05	50.84	74.00	-23.16	141	100	Peak
7236.00	35.77	11.92	47.69	74.00	-26.31	110	100	Peak
8292.00	36.59	12.88	49.47	74.00	-24.53	226	200	Peak
9636.00	36.02	14.56	50.58	74.00	-23.42	360	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1674.00	53.14	-5.82	47.32	74.00	-26.68	238	100	Peak
2490.00	50.91	-2.07	48.84	74.00	-25.16	130	100	Peak
4836.00	45.93	4.74	50.67	74.00	-23.33	152	200	Peak
4983.00	47.32	5.04	52.36	74.00	-21.64	164	100	Peak
7236.00	32.60	11.92	44.52	54.00	-9.48	130	200	Average
7236.00	41.32	11.92	53.24	74.00	-20.76	130	200	Peak
8520.00	36.25	13.08	49.33	74.00	-24.67	89	200	Peak
9828.00	37.01	15.33	52.34	74.00	-21.66	166	200	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11gn HT20 MCS0 Mode / TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	46.50	-2.52	43.98	54.00	-10.02	342	200	Average
2390.00	60.15	-2.52	57.63	74.00	-16.37	342	200	Peak
2483.50	47.85	-2.09	45.76	54.00	-8.24	229	168	Average
2483.50	66.28	-2.09	64.19	74.00	-9.81	229	200	Peak
4872.00	45.60	4.82	50.42	54.00	-3.58	253	200	Average
4872.00	53.40	4.82	58.22	74.00	-15.78	253	200	Peak
4983.00	42.24	5.04	47.28	74.00	-26.72	154	200	Peak
7296.00	38.01	12.10	50.11	74.00	-23.89	172	200	Peak
8268.00	36.34	12.86	49.20	74.00	-24.80	105	100	Peak
9444.00	36.74	14.03	50.77	74.00	-23.23	238	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	42.60	-2.52	40.08	54.00	-13.92	29	100	Average
2390.00	56.37	-2.52	53.85	74.00	-20.15	29	100	Peak
2483.50	40.90	-2.09	38.81	54.00	-15.19	20	200	Average
2483.50	59.85	-2.09	57.76	74.00	-16.24	20	200	Peak
4869.00	48.40	4.81	53.21	54.00	-0.79	157	162	Average
4869.00	56.46	4.81	61.27	74.00	-12.73	157	200	Peak
4989.00	49.82	5.06	54.88	74.00	-19.12	142	100	Peak
7308.00	33.50	12.14	45.64	54.00	-8.36	144	200	Average
7308.00	42.58	12.14	54.72	74.00	-19.28	144	200	Peak
8520.00	36.47	13.08	49.55	74.00	-24.45	253	200	Peak
9852.00	35.68	15.43	51.11	74.00	-22.89	341	200	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11gn HT20 MCS0 Mode / TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2248.00	46.60	-3.16	43.44	74.00	-30.56	236	200	Peak
2390.00	40.11	-2.52	37.59	74.00	-36.41	105	200	Peak
4926.00	44.59	4.93	49.52	74.00	-24.48	148	100	Peak
4983.00	45.02	5.04	50.06	74.00	-23.94	139	100	Peak
7344.00	36.21	12.25	48.46	74.00	-25.54	101	200	Peak
8736.00	36.18	13.57	49.75	74.00	-24.25	330	200	Peak
9900.00	36.36	15.62	51.98	74.00	-22.02	65	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1786.00	50.96	-5.30	45.66	74.00	-28.34	336	200	Peak
2390.00	45.03	-2.52	42.51	74.00	-31.49	154	200	Peak
4923.00	41.50	4.92	46.42	54.00	-7.58	153	162	Average
4923.00	49.24	4.92	54.16	74.00	-19.84	153	200	Peak
4980.00	44.50	5.04	49.54	54.00	-4.46	148	100	Average
4980.00	52.04	5.04	57.08	74.00	-16.92	148	100	Peak
7368.00	37.05	12.33	49.38	74.00	-24.62	201	100	Peak
8772.00	35.93	13.65	49.58	74.00	-24.42	296	100	Peak
10056.00	35.92	16.06	51.98	74.00	-22.02	135	200	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11gn HT40 MCS0 Mode / TX / CH Low	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2266.00	47.20	-3.08	44.12	74.00	-29.88	249	200	Peak
2483.50	47.32	-2.09	45.23	74.00	-28.77	246	100	Peak
4848.00	37.55	4.77	42.32	74.00	-31.68	256	100	Peak
4989.00	43.52	5.06	48.58	74.00	-25.42	261	200	Peak
6924.00	36.04	11.15	47.19	74.00	-26.81	214	200	Peak
8340.00	36.09	12.92	49.01	74.00	-24.99	329	200	Peak
9876.00	35.74	15.52	51.26	74.00	-22.74	241	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2186.00	48.63	-3.45	45.18	74.00	-28.82	136	100	Peak
2492.00	50.99	-2.06	48.93	74.00	-25.07	132	100	Peak
4842.00	41.57	4.75	46.32	74.00	-27.68	154	200	Peak
4983.00	28.10	5.04	33.14	54.00	-20.86	149	100	Average
4983.00	50.07	5.04	55.11	74.00	-18.89	149	100	Peak
6696.00	36.51	11.04	47.55	74.00	-26.45	250	200	Peak
8076.00	35.78	12.72	48.50	74.00	-25.50	148	200	Peak
9600.00	36.10	14.41	50.51	74.00	-23.49	148	200	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
 $\text{Margin} = \text{Result} - \text{Limit}$
 $\text{Remark Peak} = \text{Result(PK)} - \text{Limit(PK)}$
 $\text{Remark AVG} = \text{Result(AV)} - \text{Limit(AV)}$

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11gn HT40 MCS0 Mode / TX / CH Middle	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	50.50	-2.52	47.98	74.00	-26.02	335	200	Peak
2483.50	46.75	-2.09	44.66	54.00	-9.34	266	160	Average
2483.50	56.86	-2.09	54.77	74.00	-19.23	288	200	Peak
4878.00	41.50	4.83	46.33	54.00	-7.67	253	200	Average
4878.00	48.49	4.83	53.32	74.00	-20.68	253	200	Peak
4989.00	42.43	5.06	47.49	74.00	-26.51	248	100	Peak
7092.00	36.02	11.47	47.49	74.00	-26.51	281	200	Peak
8304.00	35.96	12.89	48.85	74.00	-25.15	322	100	Peak
9684.00	35.52	14.75	50.27	74.00	-23.73	39	200	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	48.51	-2.52	45.99	74.00	-28.01	216	200	Peak
2483.50	44.90	-2.09	42.81	54.00	-11.19	35	200	Average
2483.50	54.83	-2.09	52.74	74.00	-21.26	35	200	Peak
4881.00	46.80	4.83	51.63	54.00	-2.37	160	160	Average
4881.00	53.90	4.83	58.73	74.00	-15.27	160	200	Peak
4995.00	42.50	5.07	47.57	54.00	-6.43	158	100	Average
4995.00	49.97	5.07	55.04	74.00	-18.96	158	100	Peak
6648.00	36.26	11.02	47.28	74.00	-26.72	360	200	Peak
8376.00	35.47	12.95	48.42	74.00	-25.58	78	100	Peak
9648.00	36.36	14.60	50.96	74.00	-23.04	36	200	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Product Name	7-inch WiFi Multimedia Navi 2DIN	Test By	Rex Chiu
Test Model	PTA-100	Test Date	2017/08/16
Test Mode	IEEE 802.11gn HT40 MCS0 Mode / TX / CH High	Temp. & Humidity	25°C, 50%

966Chamber_B at 3Meter / Horizontal

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2248.00	49.31	-3.16	46.15	74.00	-27.85	245	200	Peak
2390.00	39.66	-2.52	37.14	74.00	-36.86	263	200	Peak
4902.00	40.07	4.88	44.95	74.00	-29.05	174	200	Peak
4995.00	41.14	5.07	46.21	74.00	-27.79	126	100	Peak
6684.00	36.64	11.03	47.67	74.00	-26.33	335	100	Peak
7740.00	36.68	12.70	49.38	74.00	-24.62	258	100	Peak
9660.00	37.13	14.65	51.78	74.00	-22.22	360	100	Peak

966Chamber_B at 3Meter / Vertical

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
1938.00	53.46	-4.58	48.88	74.00	-25.12	42	100	Peak
2390.00	40.57	-2.52	38.05	74.00	-35.95	0	100	Peak
4896.00	42.84	4.87	47.71	74.00	-26.29	137	100	Peak
4986.00	28.00	5.05	33.05	54.00	-20.95	140	100	Average
4986.00	49.45	5.05	54.50	74.00	-19.50	140	100	Peak
6384.00	36.87	10.90	47.77	74.00	-26.23	28	100	Peak
7572.00	37.06	12.73	49.79	74.00	-24.21	0	100	Peak
9216.00	37.06	14.10	51.16	74.00	-22.84	151	100	Peak

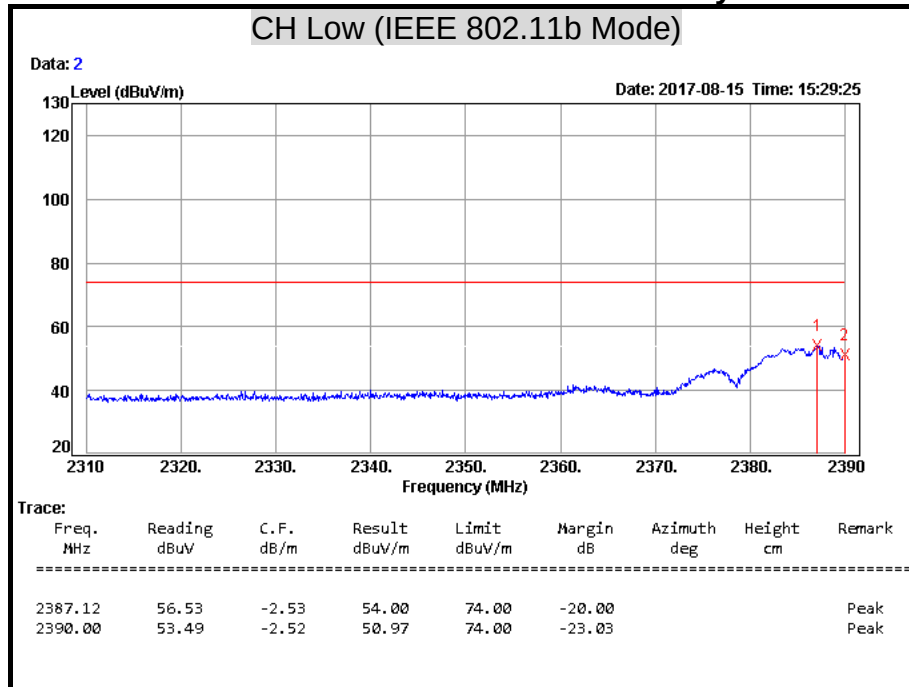
Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Average test would be performed if the peak result were greater than the average limit.
3. Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)
Remark AVG = Result(AV) – Limit(AV)

Restricted Band Edges

Detector Mode: Peak

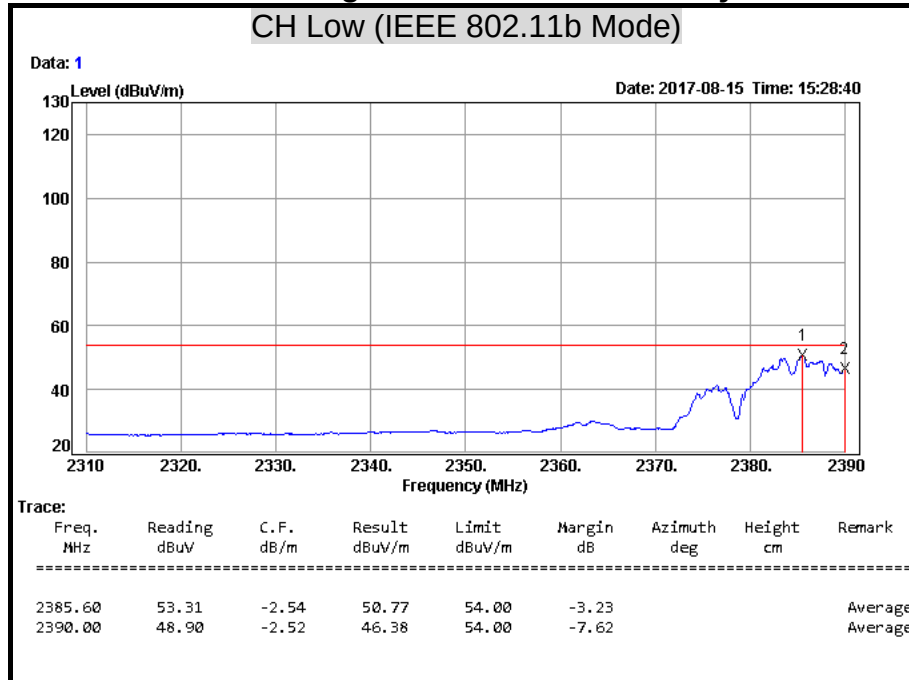
Polarity: Horizontal



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

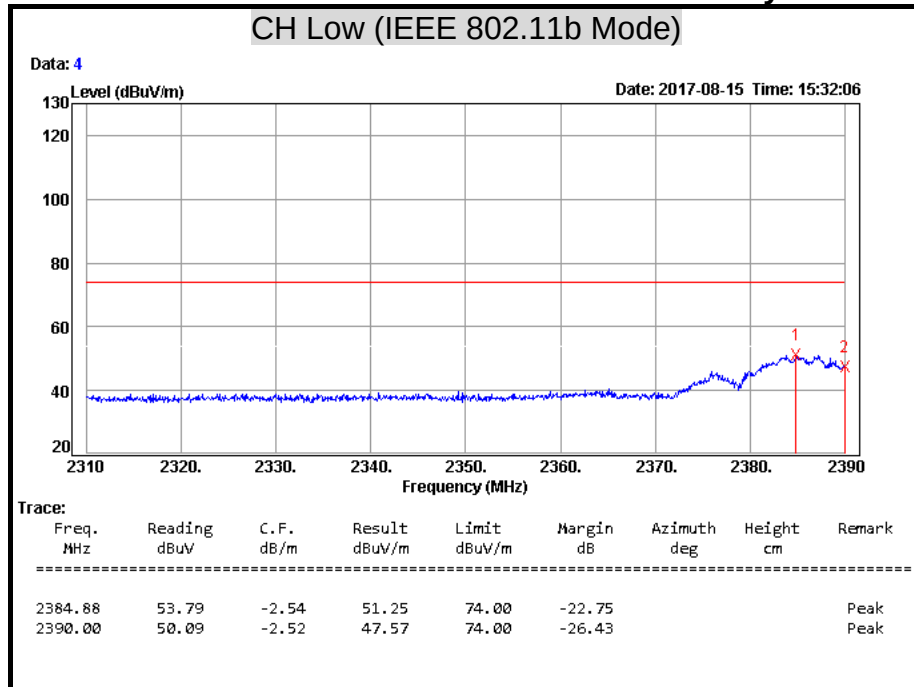
Polarity: Horizontal



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

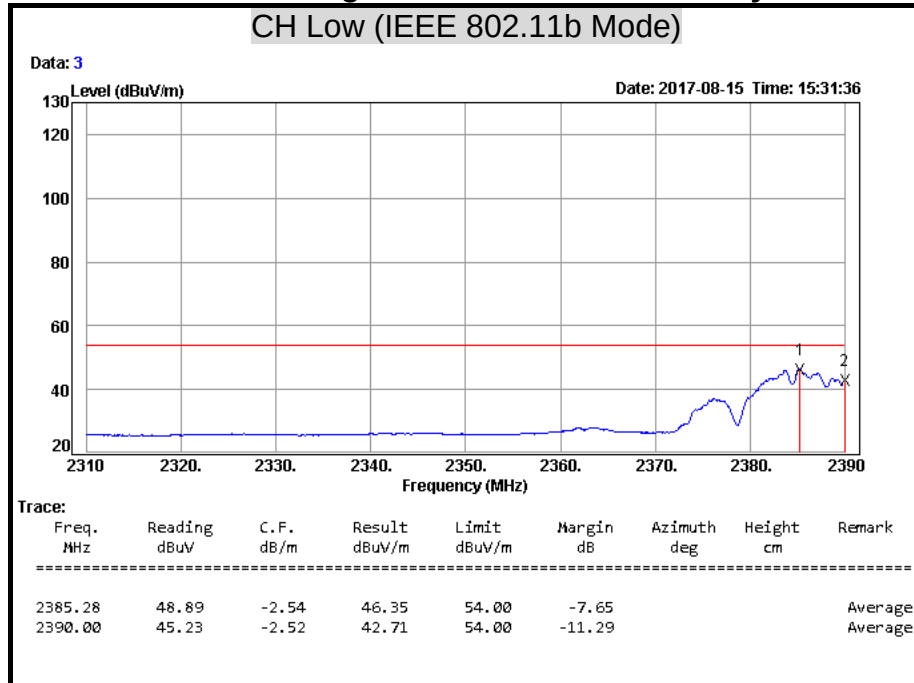
Polarity: Vertical



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

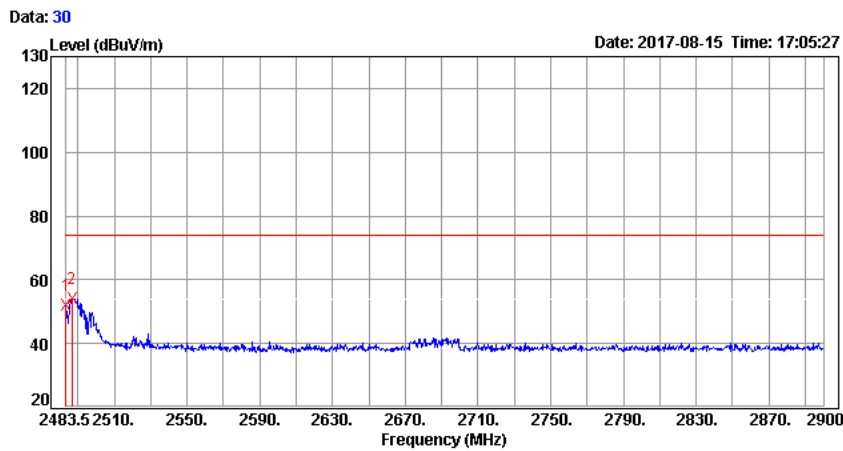


Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH High (IEEE 802.11b Mode)



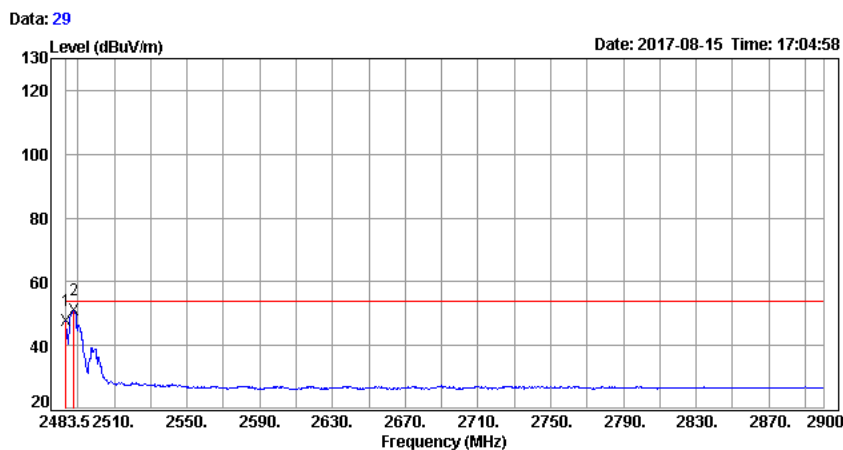
Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	54.07	-2.09	51.98	74.00	-22.02			Peak	
2486.83	56.34	-2.08	54.26	74.00	-19.74			Peak	

Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH High (IEEE 802.11b Mode)



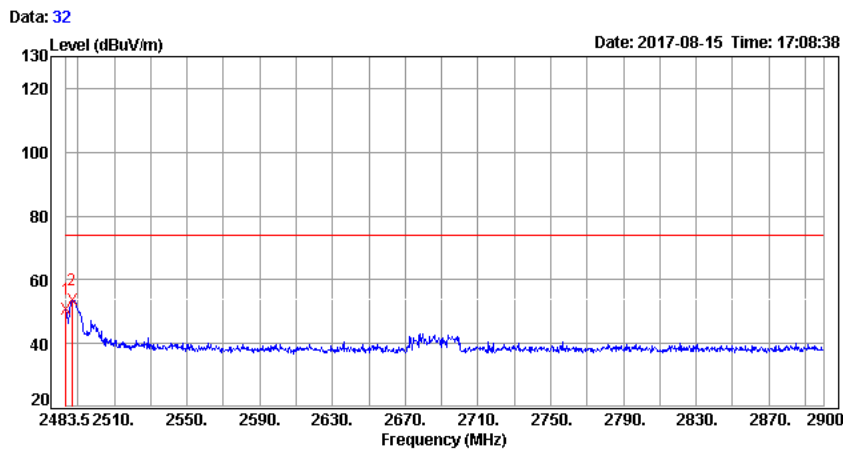
Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	49.87	-2.09	47.78	54.00	-6.22			Average	
2487.67	53.19	-2.08	51.11	54.00	-2.89			Average	

Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Vertical

CH High (IEEE 802.11b Mode)



Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	52.75	-2.09	50.66	74.00	-23.34			Peak	
2486.83	55.58	-2.08	53.50	74.00	-20.50			Peak	

Remark: Result = Reading + Correction Factor

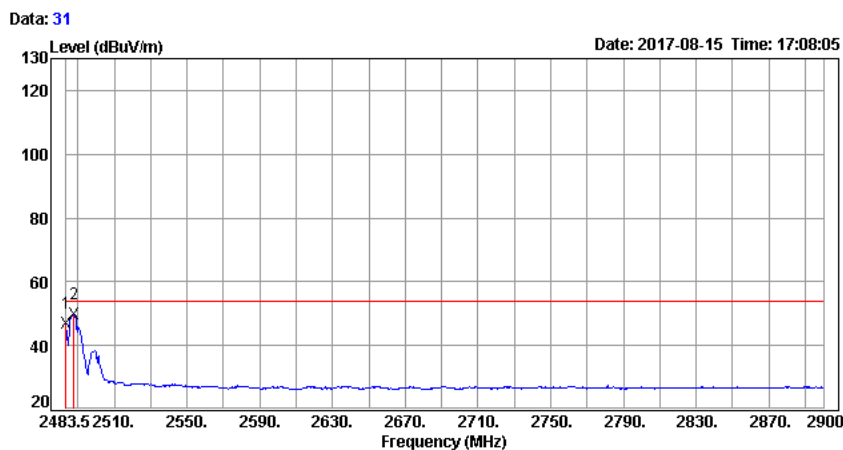
Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

CH High (IEEE 802.11b Mode)



Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	49.02	-2.09	46.93	54.00	-7.07			Average	
2487.67	51.91	-2.08	49.83	54.00	-4.17			Average	

Remark: Result = Reading + Correction Factor

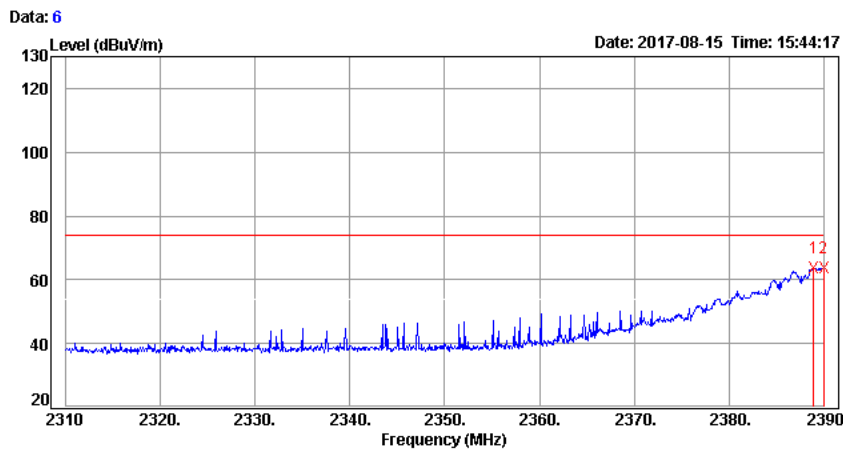
Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH Low (IEEE 802.11g Mode)



Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2388.96	66.35	-2.52	63.83	74.00	-10.17			Peak	
2390.00	66.15	-2.52	63.63	74.00	-10.37			Peak	

Remark: Result = Reading + Correction Factor

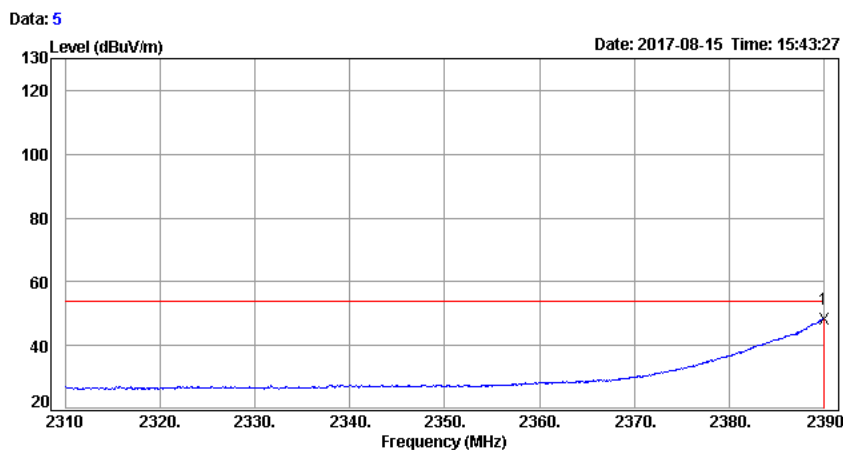
Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH Low (IEEE 802.11g Mode)



Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2390.00	50.78	-2.52	48.26	54.00	-5.74			Average	

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

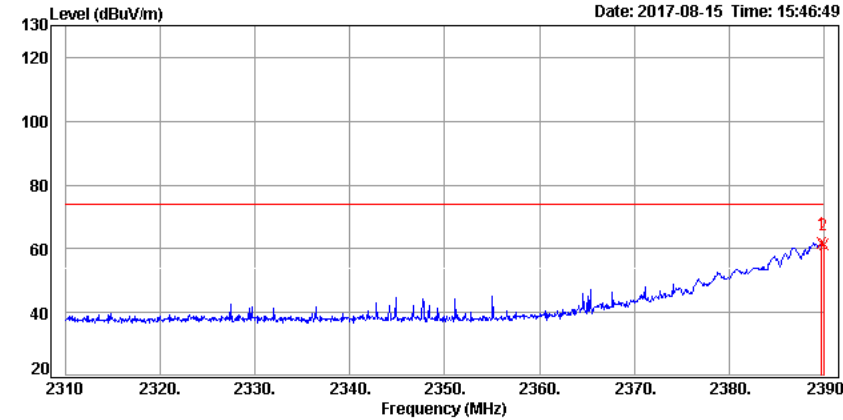
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Vertical

CH Low (IEEE 802.11g Mode)

Data: 8



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.84	64.19	-2.52	61.67	74.00	-12.33			Peak
2390.00	63.70	-2.52	61.18	74.00	-12.82			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

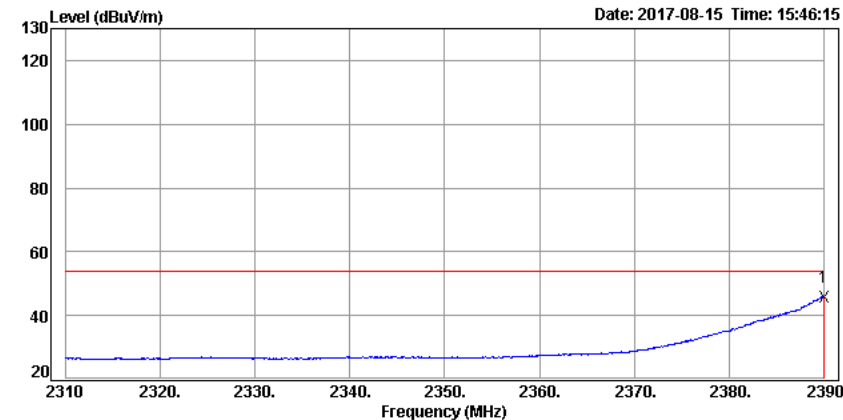
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

CH Low (IEEE 802.11g Mode)

Data: 7



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	48.41	-2.52	45.89	54.00	-8.11			Average

Remark: Result = Reading + Correction Factor

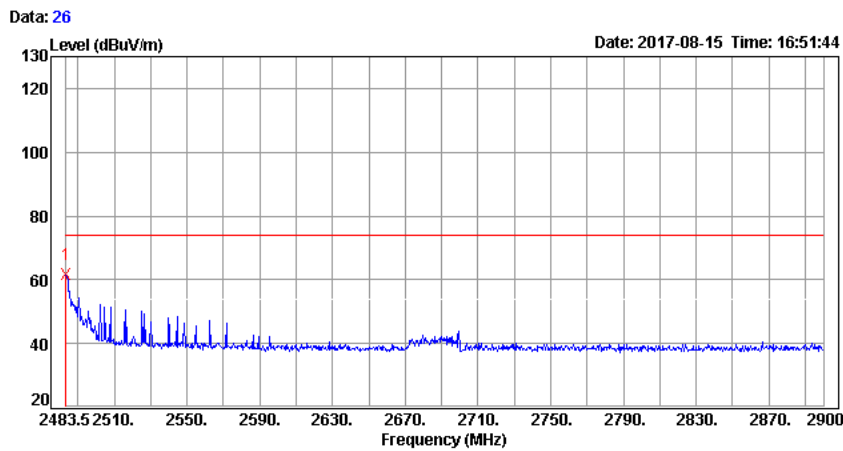
Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH High (IEEE 802.11g Mode)



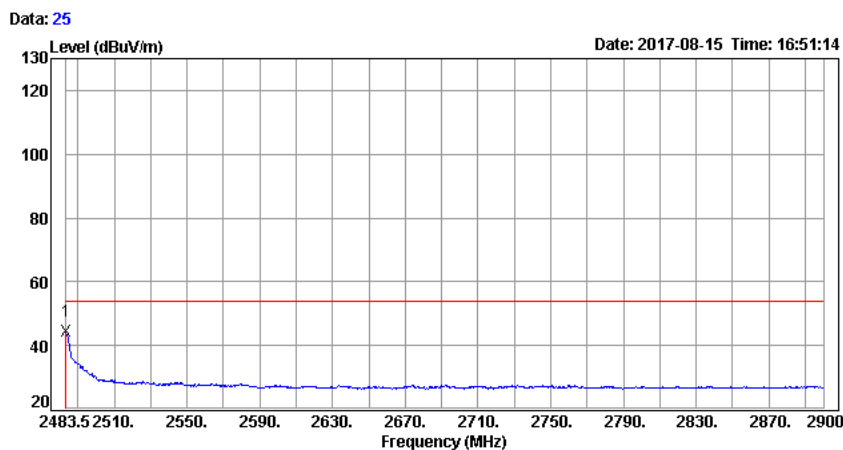
Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	63.64	-2.09	61.55	74.00	-12.45			Peak	

Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH High (IEEE 802.11g Mode)



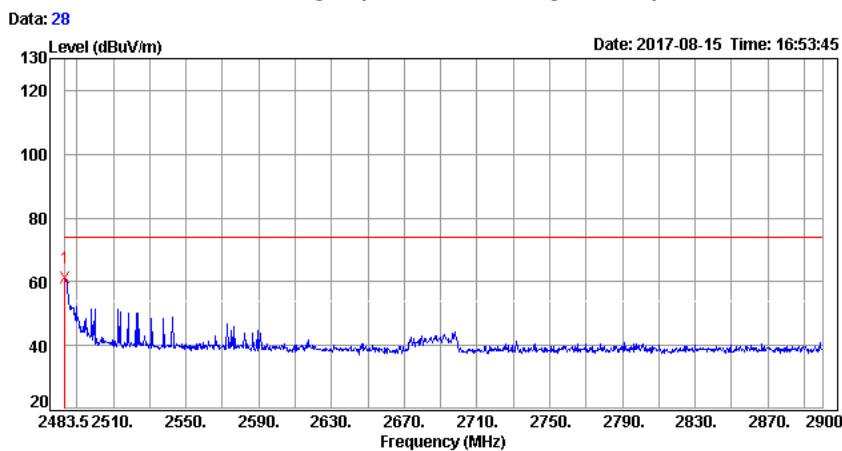
Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	46.54	-2.09	44.45	54.00	-9.55			Average	

Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Vertical

CH High (IEEE 802.11g Mode)



Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	63.29	-2.09	61.20	74.00	-12.80			Peak	

Remark: Result = Reading + Correction Factor

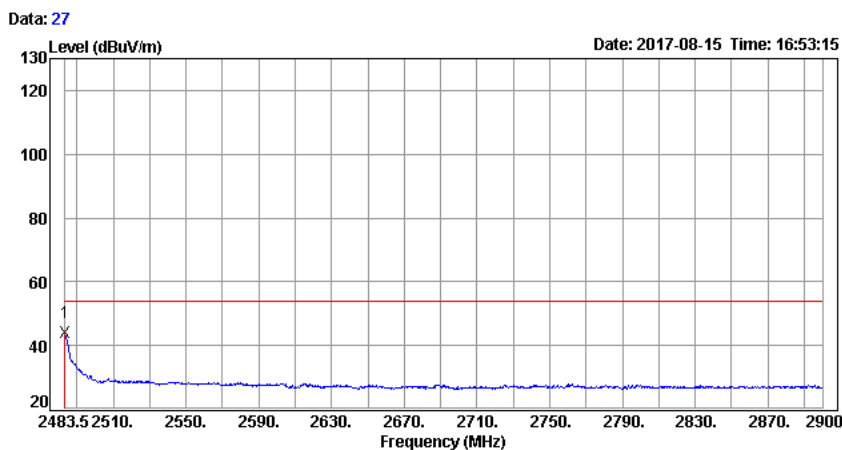
Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical

CH High (IEEE 802.11g Mode)



Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2483.50	46.16	-2.09	44.07	54.00	-9.93			Average	

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

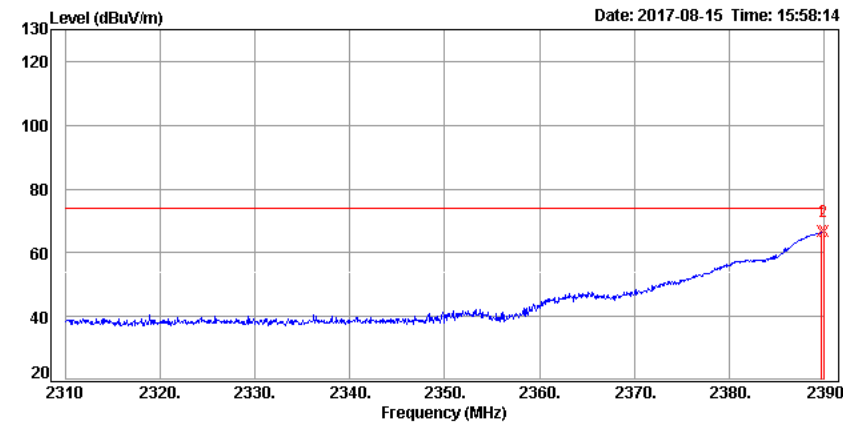
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 10



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.84	69.05	-2.52	66.53	74.00	-7.47			Peak
2390.00	69.01	-2.52	66.49	74.00	-7.51			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

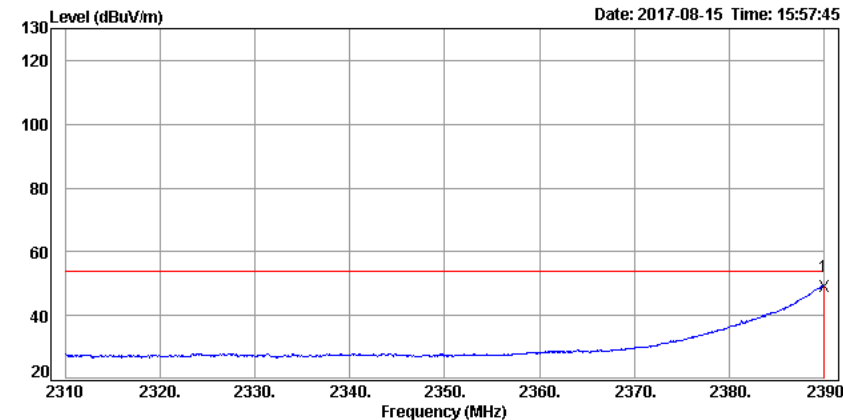
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 9



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2390.00	51.67	-2.52	49.15	54.00	-4.85			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

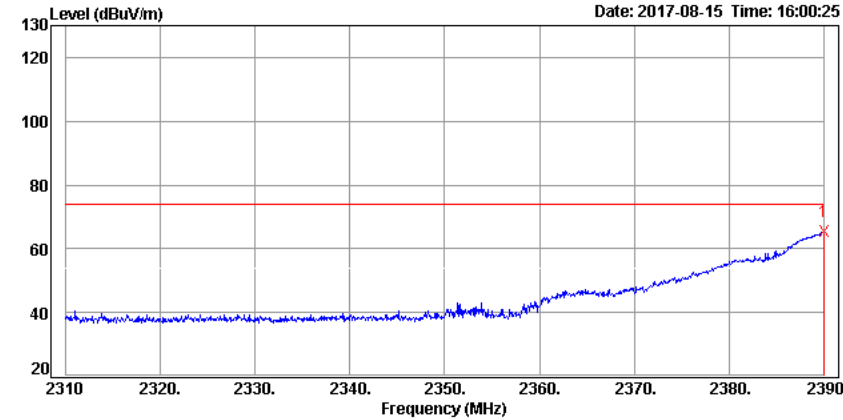
Detector Mode: Peak

Polarity: Vertical

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 12

Date: 2017-08-15 Time: 16:00:25



Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2390.00	67.86	-2.52	65.34	74.00	-8.66			Peak	

Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

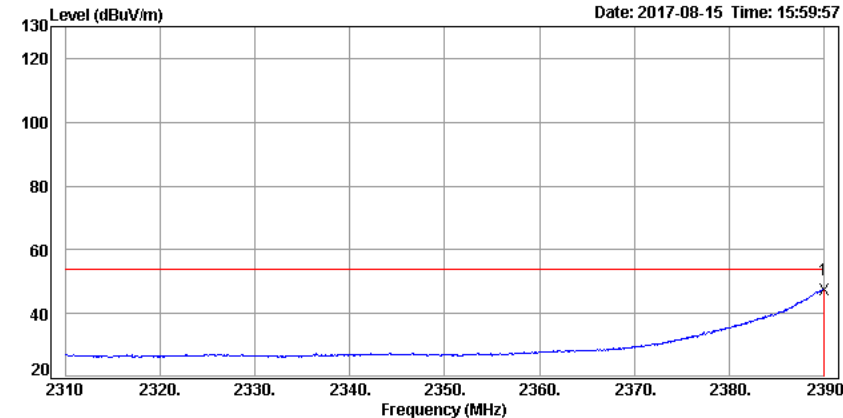
Detector Mode: Average

Polarity: Vertical

CH Low (IEEE 802.11gn HT20 MCS0 Mode)

Data: 11

Date: 2017-08-15 Time: 15:59:57

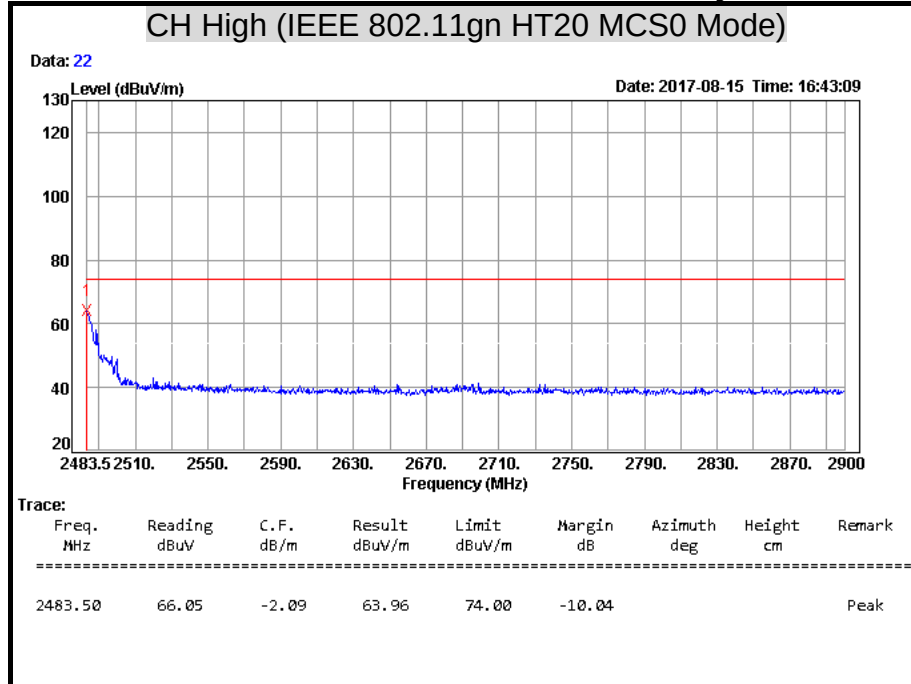


Trace:									
Freq.	Reading	C.F.	Result	Limit	Margin	Azimuth	Height	Remark	
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	deg	cm		
2390.00	50.03	-2.52	47.51	54.00	-6.49			Average	

Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

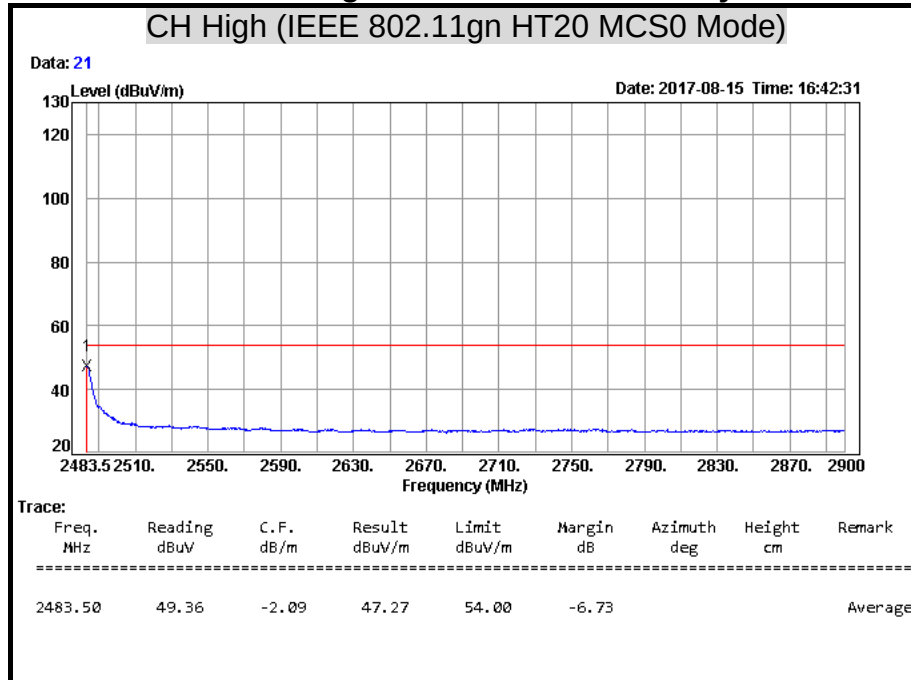
Polarity: Horizontal



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

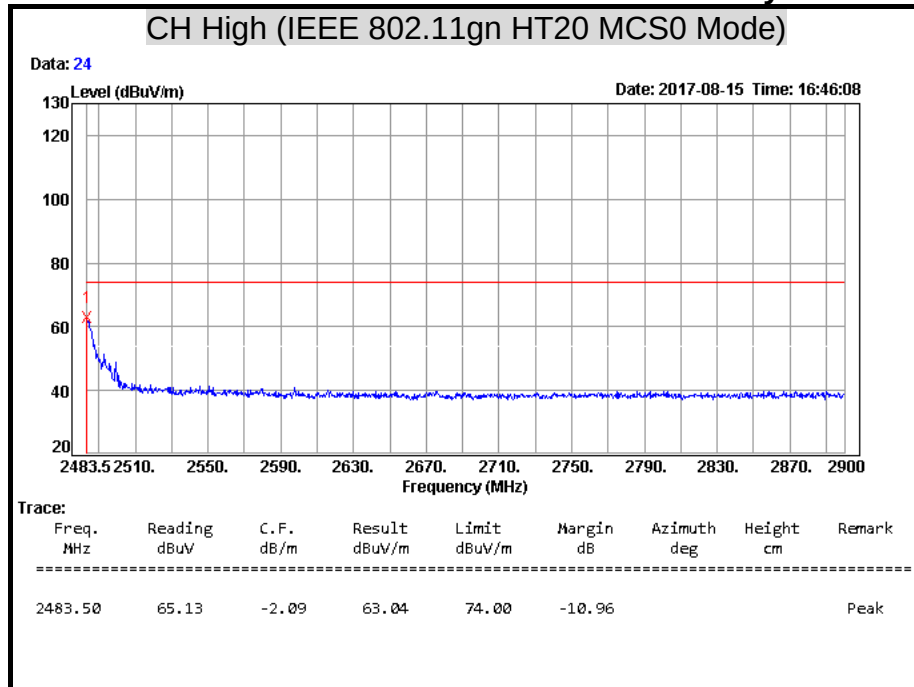
Polarity: Horizontal



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

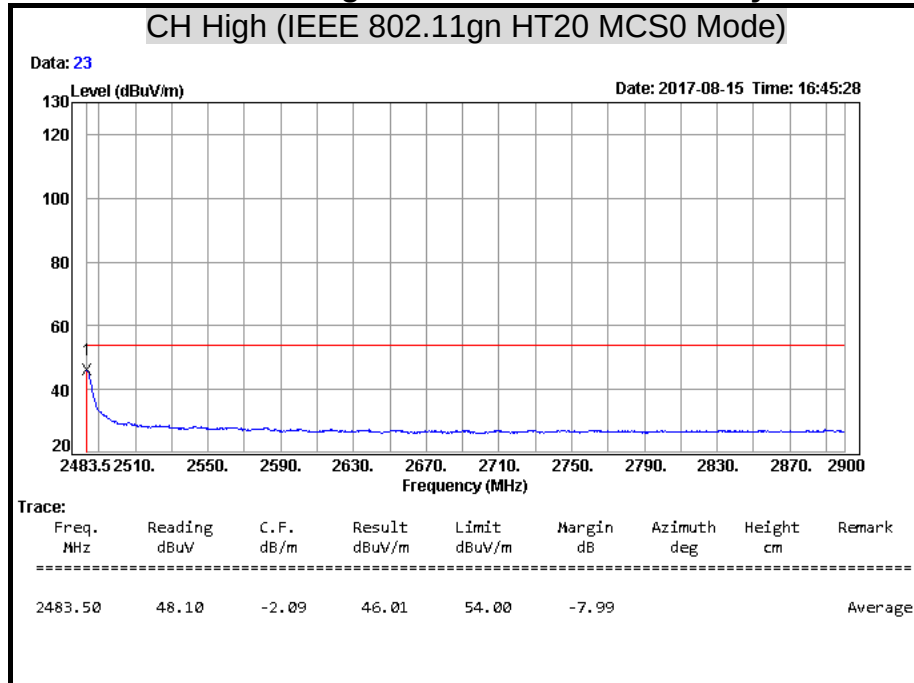
Polarity: Vertical



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical



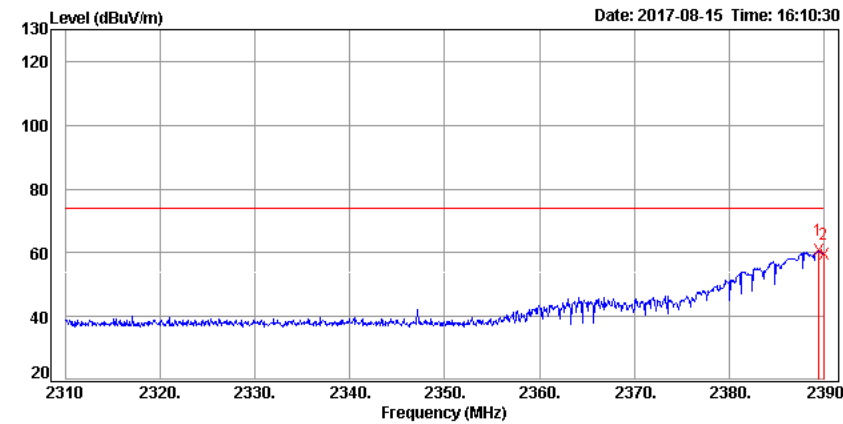
Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

Polarity: Horizontal

CH Low (IEEE 802.11gn HT40 MCS0 Mode)

Data: 14



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.44	63.20	-2.52	60.68	74.00	-13.32			Peak
2390.00	62.16	-2.52	59.64	74.00	-14.36			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

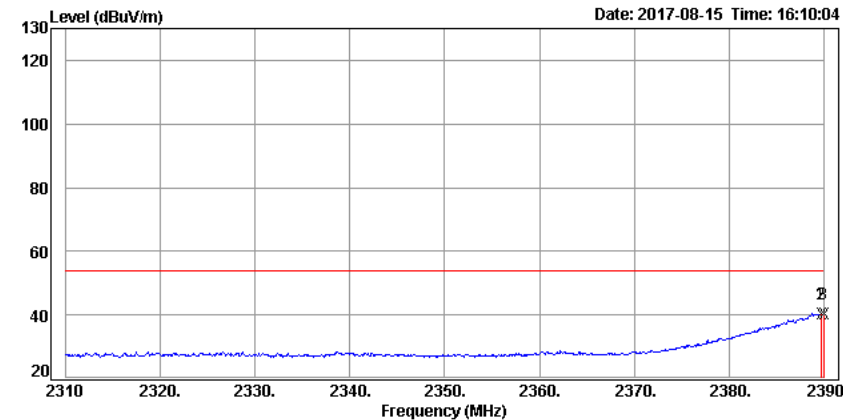
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Horizontal

CH Low (IEEE 802.11gn HT40 MCS0 Mode)

Data: 13



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.76	42.87	-2.52	40.35	54.00	-13.65			Average
2389.76	42.87	-2.52	40.35	54.00	-13.65			Average
2390.00	42.64	-2.52	40.12	54.00	-13.88			Average

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

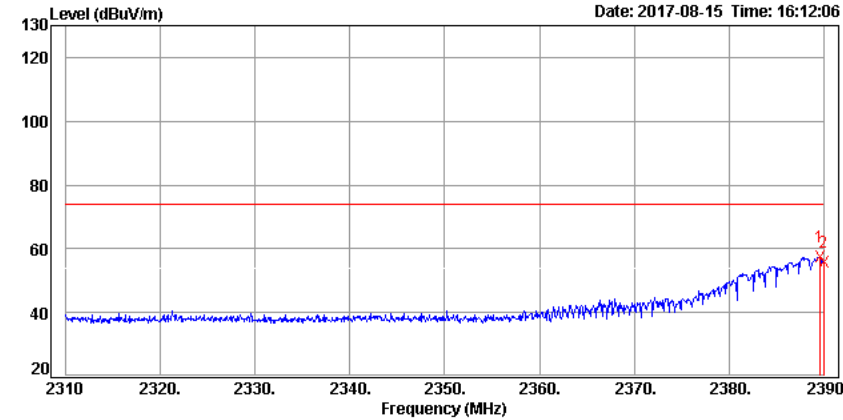
Detector Mode: Peak

Polarity: Vertical

CH Low (IEEE 802.11gn HT40 MCS0 Mode)

Data: 16

Date: 2017-08-15 Time: 16:12:06



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.60	60.01	-2.52	57.49	74.00	-16.51			Peak
2390.00	58.47	-2.52	55.95	74.00	-18.05			Peak

Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark Peak = Result(PK) – Limit(PK)

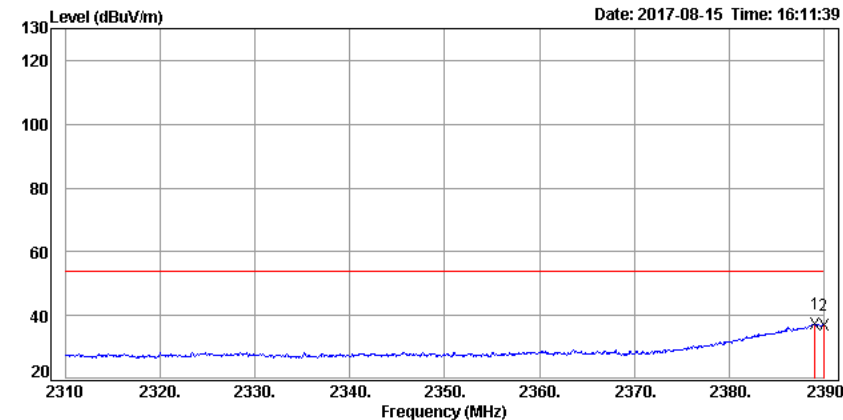
Detector Mode: Average

Polarity: Vertical

CH Low (IEEE 802.11gn HT40 MCS0 Mode)

Data: 15

Date: 2017-08-15 Time: 16:11:39



Trace:

Freq. MHz	Reading dBuV	C.F. dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Azimuth deg	Height cm	Remark
2389.12	39.82	-2.52	37.30	54.00	-16.70			Average
2390.00	39.57	-2.52	37.05	54.00	-16.95			Average

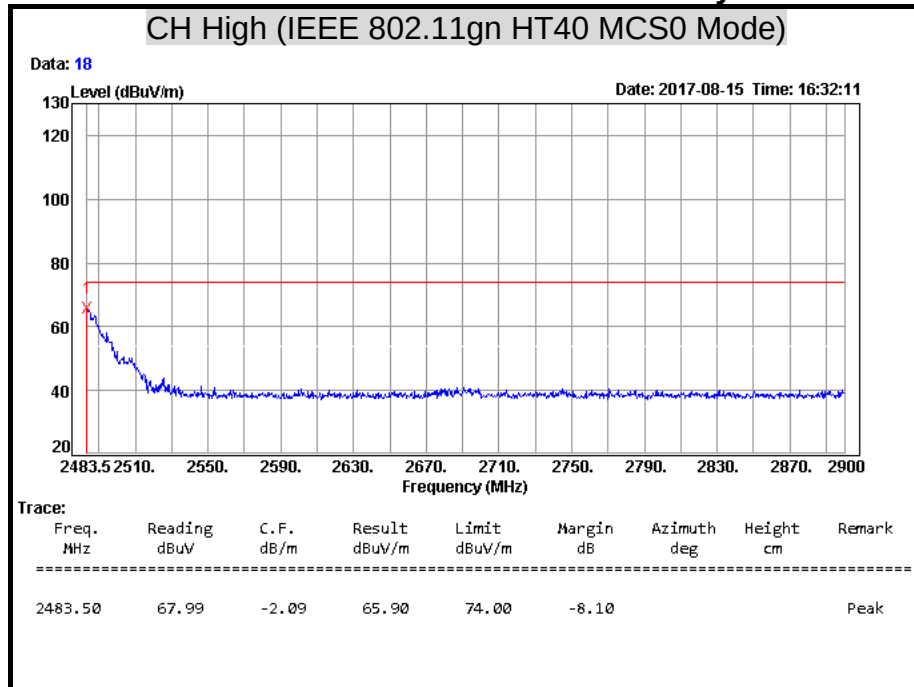
Remark: Result = Reading + Correction Factor

Margin = Result – Limit

Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

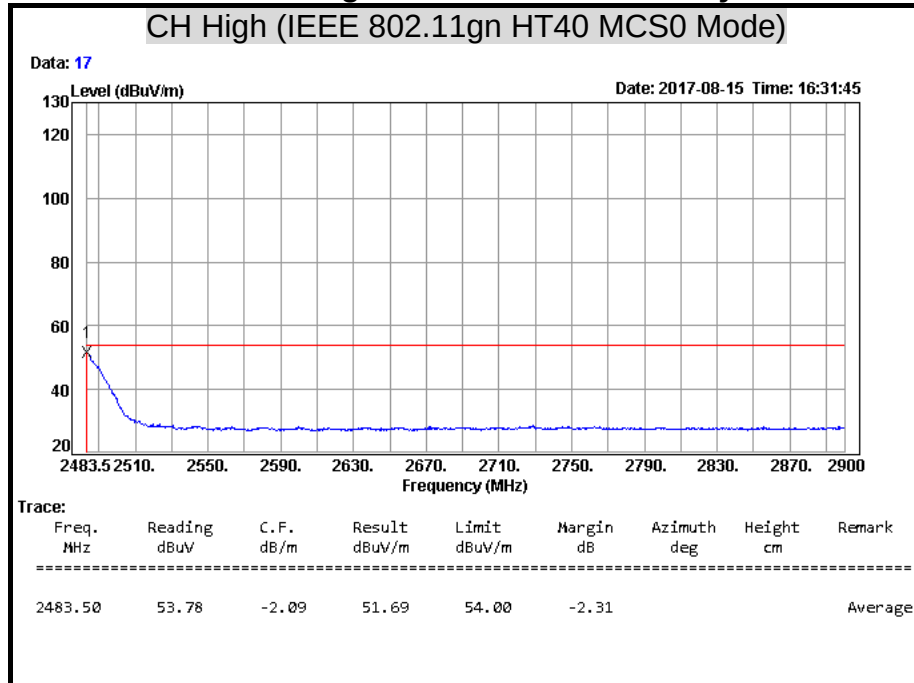
Polarity: Horizontal



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

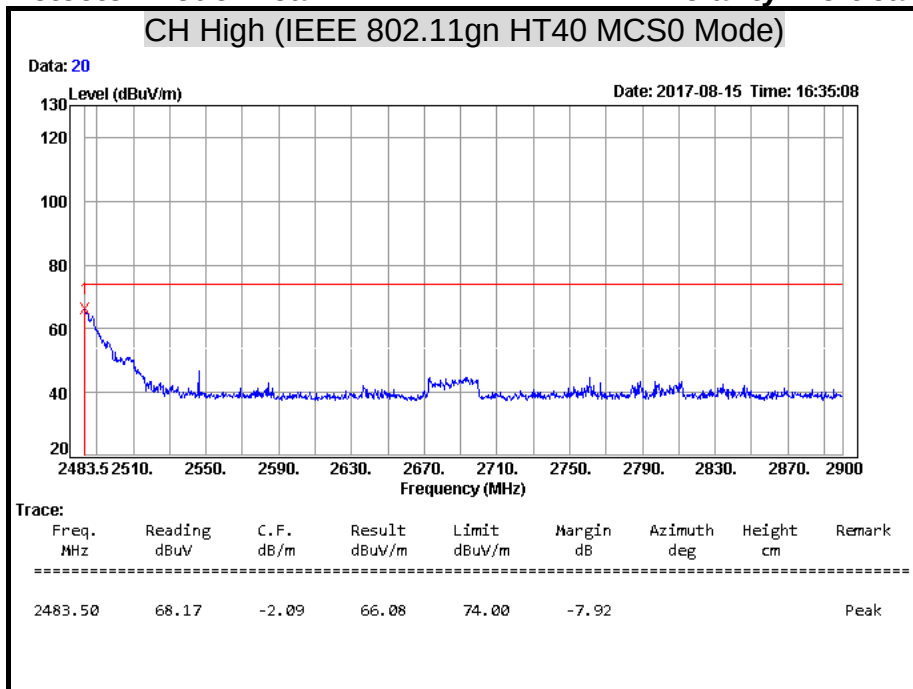
Polarity: Horizontal



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

Detector Mode: Peak

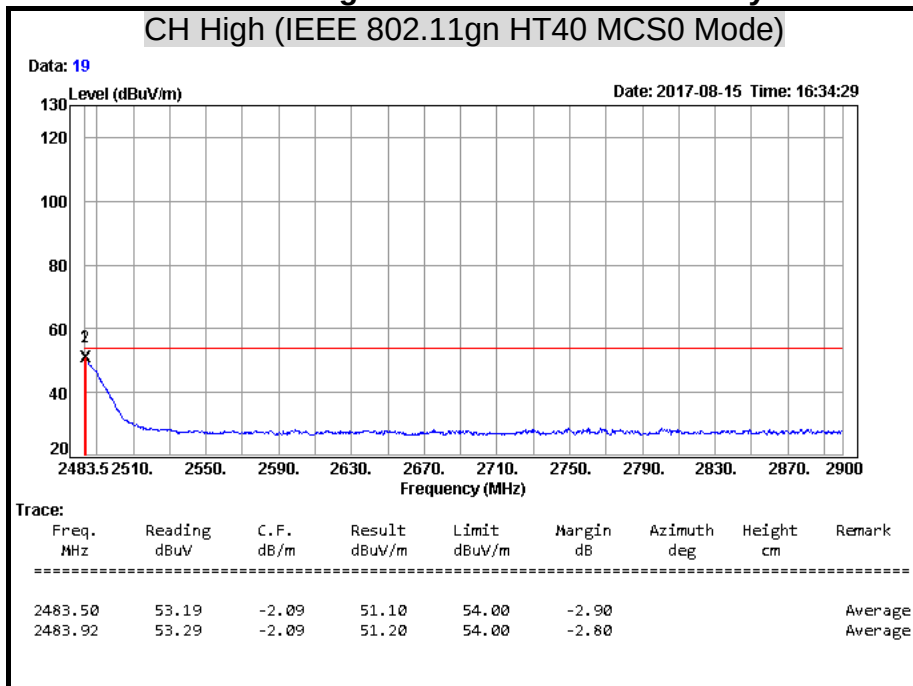
Polarity: Vertical



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark Peak = Result(PK) – Limit(PK)

Detector Mode: Average

Polarity: Vertical



Remark: Result = Reading + Correction Factor
Margin = Result – Limit
Remark AVG = Result(AV) – Limit(AV)

8.8 CONDUCTED EMISSION

LIMITS

§ 15.207 (a) Except as shown in paragraph (b) and (c) this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

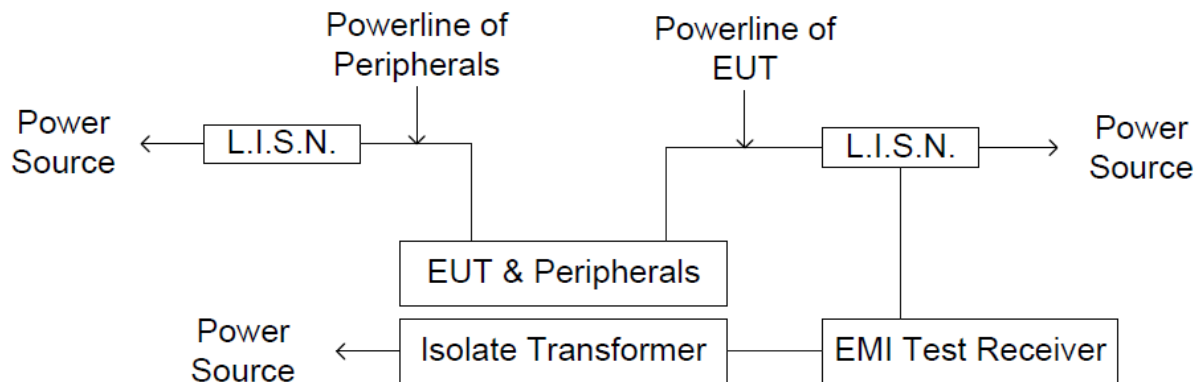
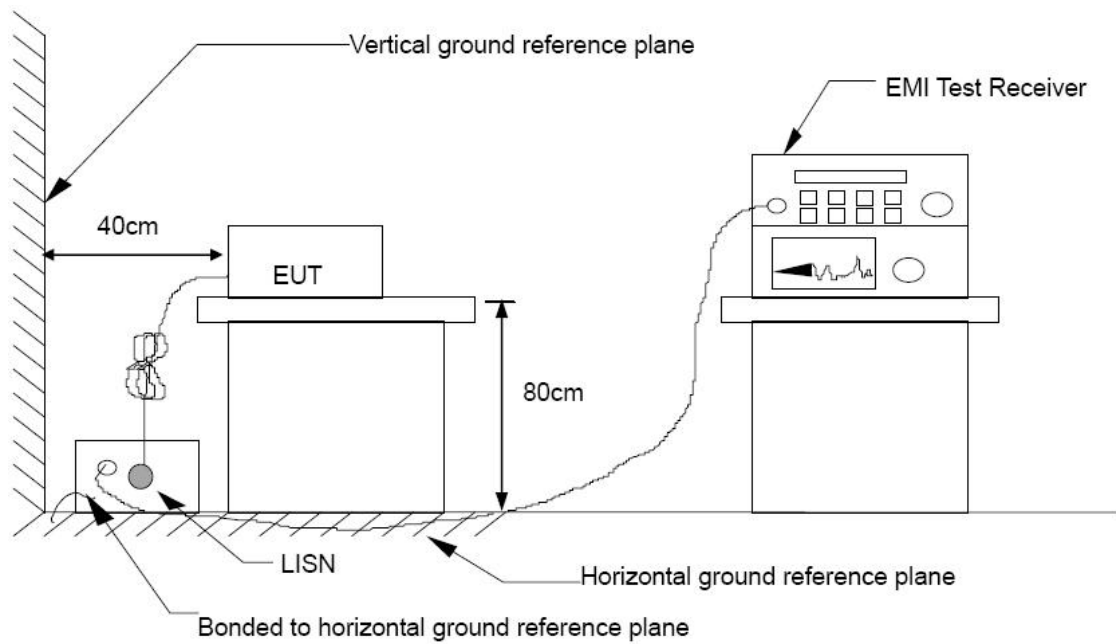
Frequency Range (MHz)	Conducted Limit (dB μ v)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5.00	56	46
5.00 - 30.0	60	50

TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	Schwarzbeck	NSLK 8127	8127465	08/14/2018
L.I.S.N	Schwarzbeck	NSLK 8127	8127473	03/12/2018
EMI Test Receiver	Rohde & Schwarz	ESHS 30	838550/003	10/31/2018
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100111	06/28/2018
Test S/W	E3.815206a			

Remark: Each piece of equipment is scheduled for calibration once a year.

TEST SETUP



TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.10:2013.

The test procedure is performed in a 4m × 3m × 2.4m (L×W×H) shielded room.

The EUT along with its peripherals were placed on a 1.0m (W) × 1.5m (L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.

The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.

The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN is 0.8 m. Where a mains flexible cord was provided by the manufacturer shall be 1 m long, or if in excess of 1 m, the excess cable was folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

TEST RESULTS

Since the EUT is powered by battery powered, this test item is not applicable.